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Railway Age
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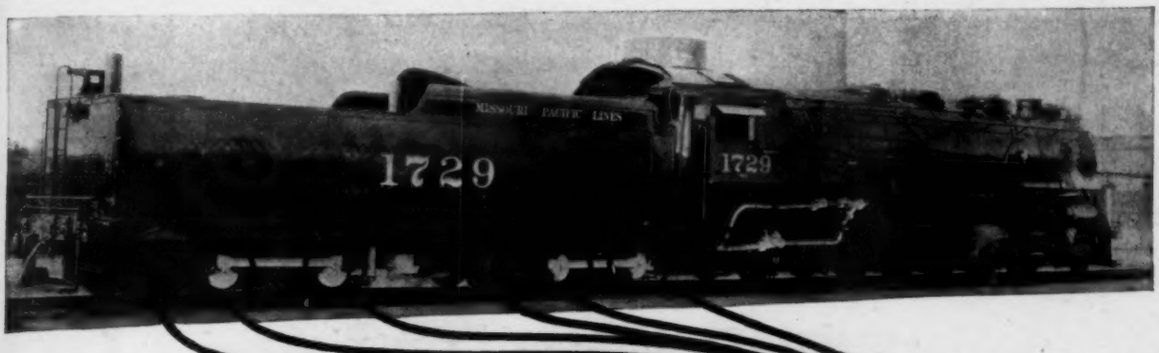
FIRST HALF OF 1928—No. 19 MAY 12, 1928 SEVENTY-THIRD YEAR



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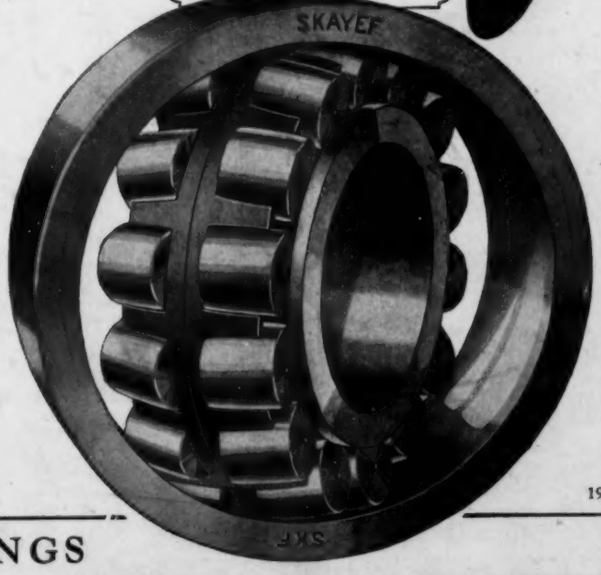

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Railway Age

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Railway Age

Vol. 84, No. 19 May 12, 1928

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Attention: Program Committees

THE program committees of the various railway clubs and associations need tear their hair no longer in desperate search for a new topic of discussion at the meetings, dinners and banquets in their charge. Thanks to the daily press, with the timely co-operation of Lindbergh, Byrd, Chamberlain, the German and Irish flyers and others, there is one subject which today stands ahead of all the rest in general public interest and particularly in the interest of railway men. This is the subject of air transportation. Aviation and air transportation have been featured already at several large gatherings of railway officers. The New York Railroad Club, the Pacific Railway Club and the Western Railway Club, to mention only a few which will serve to indicate the scope of the interest in these subjects, have had aviation and air transport dinners. As we recall, the attendance at these meetings was about as large, if not larger, than that at any previous meetings of these organizations, constituting ample proof of the popularity of these new subjects. The program committees of other such groups, which are in the midst of the travail usually incident to the arrangement of dinners and meetings which will bring out the crowds, can save themselves no end of worry by bearing this in mind. As a sure-fire drawing card, it is hard to beat aviation at this time.

Expediting Convention Business While Encouraging Discussion

THE Railway Accounting Officers Association at its convention has always to pass upon a great many committee recommendations. In spite of the volume of these recommendations, however, its work is so organized that the convention generally proceeds ahead of schedule rather than behind it. The problem being what it is and the performance so satisfactory, the method of accomplishing the result may be of some interest. The various committees perpare their reports in tentative form well in advance of the annual meeting and these are combined and published, all in one volume called the Agenda, by the secretary of the association. This volume of Agenda is distributed to all the members of the association some weeks in advance of the meeting, so that all have an opportunity to study the reports before they come to the convention. The first day of the convention is a committee day. Each committee holds an open session to which any member is welcome. If there are any criticisms of the proposed report, the members can at this time discuss them with the committee and possibly secure a change in the recommendations before the report is actually presented on the floor of the convention proper. The result of this procedure is to iron out major causes of disagreement before the general meeting convenes and eliminate lengthy discussion of each report as it is formally presented. The work of the association is thus expedited —but not at the expense of limiting discussion or by the use of a "steam roller." Expedition in convention action is desirable, but not if securing it curtails full argument and expression by all members who wish to be heard. The R.A.O.A. procedure seems to secure efficiency while actually encouraging discussion. The problems of other associations differ, of course, and a method successful in one field is not necessarily applicable to another. However, there may be some features of the practices of the accounting organization which might be helpful elsewhere.

Motive Power Economics

ABOUT a year ago a large eastern road placed a substantial order for new freight locomotives, notable for unusually large boiler capacity, grate area and driving wheels, and designed primarily to expedite freight movement over the road in question by hauling tonnage trains at substantially higher average speeds. As soon as the locomotives were received and placed in regular service, accurate dynamometer car tests were made to determine if anticipated economies were being realized. The results of these tests afforded ample proof of the wisdom of the management's policy in installing the new power. On a 202-mile run over grades up to 1.1 per cent, one of the new locomotives hauled 3,079 average actual tons as compared to 2,629 tons hauled by a former Santa Fe type locomotive of the same tractive power, the relative coal consumptions being 51,970 lb. and 76,000 lb., respectively. The new locomotive, therefore, hauled 17.1 per cent greater load while burning 32.7 per cent less fuel. The running time also was reduced from 10 hr. 14 min. to 7 hr. 37 min., representing an increase in average speed of 34.5 per cent. On another low grade line run of 196 miles, one of the new locomotives hauled 21 per cent greater load on 6 per cent less fuel and at 36 per cent greater average speed than a heavy government Mikado. The use of a tender holding 16,500 gal. of water and 24 tons of coal, was responsible in a measure for the saving in running time due to the elimination of certain water and coal stops. Many different figures have been quoted recently regarding the savings which may be expected due to the replacement of old locomotives by modern power. While actual figures will vary somewhat, depending upon conditions, the records show that they are all high. The evidence seems indisputable that to secure more economical and generally satisfactory operation, the railroads are faced with the necessity of replacing their older and less efficient locomotives as fast as practicable with the best modern types. Intensive use must then be made of this power in order to earn a maximum return on the large investment involved.

Needs of the Younger Men

THE Chesapeake & Ohio and the Hocking Valley were quick to follow the lead of the first International Younger Railroad Men's Conference, which was held at St. Louis a little more than four years ago; indeed, it is the only group which has thus far held system conferences of this kind, although several now have the matter under consideration. Today, however, the Chesapeake & Ohio and the Hocking Valley have turned the tables on the parent organization and because their conference is smaller and more easily controlled, are now stepping ahead and setting a pace for the national conferences.

In the first place, so much must be accomplished within a two-and-a-half or three-day meeting, that it is desirable to do far more in the way of advance preparations than was possible with the earlier conferences. At a conference at Huntington, W. Va., last week, for instance, most of the young men filled out questionnaires well in advance, so that they could be studied and the program remodeled to make the conference more effective. Then, too, there has always been a demand on the part of the younger men for a maximum of time for discussion purposes. It has been the practice to divide the conferences into two sets of discussion groups, one to consider what might be termed character-forming questions, and the other to discuss vocational training. For the latter groups it was, of course, necessary that the boys be selected strictly in accordance with their occupations, so that the best use could be made of the practical railroad officer who was assigned to each group. The groups for the discussion of character-forming questions were made up on quite a different basis, and, naturally, in such intensive conventions, there was more or less confusion caused by the fact that each boy was assigned to two different groups, even though they met at different times.

At the recent Chesapeake & Ohio conference only one set of groups was provided for, these being based upon the boy's vocation. There were two leaders for each group, one, the practical railroad officer who could advise with the boys as to their vocations and how to better fit themselves for their life work, and the other, a Y. M. C. A. boys' worker, who could lead the discussion on character-forming problems. It was found that the single group scheme worked far better than the former method, although at future conferences on the Chesapeake & Ohio the railroad officers will probably sit in only on the discussions which they conduct, spending the time while the other discussions are going on in a conference among themselves as to how they can render the best service in advising the boys as to their vocational problems.

The Chesapeake & Ohio and Hocking Valley have given much thought and study as to how the advantages of their system younger men's conferences, which can only be attended by about 125 young men, may be extended to every young man on the system. For one thing no young man is allowed to attend more than one of these conferences, so that an entirely different group is touched each year. Then, too, every young man who attends such a conference is followed up and periodic reports compiled, which reach the president of the system, showing just what they are doing to improve themselves and take advantage of the help and inspiration that were available at the conference. A still more promising step is being taken which was started by and is being promoted by the boys themselves, and that is the formation of AREB or American Railway Employed Boys' Clubs. Six such clubs are now functioning on the Chesapeake & Ohio, made up of young men who are anxious to improve themselves. The clubs meet regularly, most of them once a week, and the programs include social and athletic features as well as mental improvement and character-forming objectives. Undoubtedly these clubs will do much to carry the spirit of the system conferences back to the local points.

The indications are that the number of AREB clubs on the Chesapeake & Ohio will be greatly increased in the coming months. The Chesapeake & Ohio program for "building men for the future," covering as it does younger men in all the departments of the railway, appears to be steadily gaining in strength, as the technique for holding annual conferences and carrying on follow-up work is further developed and improved.

The Washout—A Human Problem

SUMMER in most parts of the country is the season when rainfall takes the form of local showers. Varying in intensity, duration and extent, they may range from the merest spatter of drops to the veritable cloudburst and comprise a potential source of hazard to railway property from which even the most arid regions are not immune. That they are a common cause of railway accidents is indicated by the fact that of eleven train accidents investigated by the Bureau of Safety which were reported in the *Railway Age* of May 19, two resulted from washouts while a third was ascribed to circumstances of an allied nature.

While it is the earnest endeavor of railway managements to build their main trunk lines to such high standards of permanence that they will be secure against the severest of flood conditions, it is economically impossible for them to provide against the possibilites of the remote or extraordinary. It is far cheaper to restore damage from such causes which may occur in a given locality but once in a lifetime than to attempt construction which will be invulnerable. Therefore, rather than to prevent the occasional washout, the primary problem of the railway managements is to insure that such washouts will be apprehended before they result in train accidents.

This principle has been recognized in the establishment of a common understanding that transportation and roadway organizations must be forever on the alert to anticipate trouble of this kind. The operator reports all rainfall of especial severity to his chief, while the section foreman patrols his section whenever he has reason to question the security of the track, and in a large proportion of the washout accidents investigated by the Bureau of Safety of the Interstate Commerce Commission, the fact has been developed that the storm which caused the damage has been a source of concern to someone in the railway organization. Failure to apprehend the true danger in such cases resulted from human frailty; the system did not work effectually. The trackmen did not cover the ground soon enough, the train crews were not warned in time, or they failed to heed warning.

The attainment of perfection in a system of this kind is necessarily a human problem. It is a peculiarly formidable one because of the fundamental requirement of the assumption of responsibility and the exercise of judgment and initiative by the individual with little or no supervision when the emergency is at hand. On the whole, it is a challenge that calls for skillful administration and the highest type of leadership.

More About Pension Costs

IN opening the discussion of the cost of pension systems Luther Conant, Jr., in his book "A Critical Analysis of Industrial Pension Systems," makes this statement: "Expenditures under a pension plan project far into the future and ordinarily increase for a long period, so that the 'peak of the load' is not reached until 40 or 50 years, or perhaps even more, after the system is started. Exact calculations are, therefore, quite impossible. *About the only thing that can be said with positiveness on this score is that all worthwhile pension schemes are expensive.*" (The italics are ours.)

Not a few railroad executives have been watching the steadily increasing demands of pension payments with some concern, if not apprehension. The same thing is true of executives of some industrial organizations. For one thing, as stated in an editorial in the *Railway Age*, of May 5, the American method of basing railroad pension allowances on the average salary for the last 10 years of service and the total years of service, makes it practically impossible to predict with any accuracy the future financial requirements, as compared to pension allowances based upon the average annual compensation for the entire period of service and the number of years of service.

"Why," a correspondent asks, "should the pension costs increase from year to year until the peak is reached 40 or 50 years from the time the system is inaugurated? Why should the annual payments not be practically as great when the system is first started as at a later period?" For one thing, workers have already left the railway service because of old age or disability, who have no claim upon it, but who would be drawing pensions if the plan had been made effective before their retirement. It must be remembered, also, that American railroads have grown steadily and rapidly in size and extent. When men who are now going on the pension roll entered the service the total number of employees was small as compared to present-day forces. Moreover, workers are not now shifting from one road to another, as they did in the earlier days, and the turnover is far less than it was even a few years ago. Wages and salaries are also much greater today than they were when the pension systems were inaugurated on most roads. These and other factors, which have ordinarily not been carefully thought through or analyzed when the pension plans were put into effect, are causing the steady growth in the annual totals of pension payments—a growth which will mount surely and steadily for years to come.

The future burden in the case of the railroads will be all the more severe, because adequate reserves have not been set up to take care of the liabilities already incurred, and money is not being set aside for pension purposes to cover the current liabilities, other than for payments to those now on the pension rolls. Where more approved practices have been followed by industrial and other organizations and proper charges have been made against current operating revenues, the pension cost is provided for as it is incurred; the problem is made all the easier because money so set aside will earn compound interest. Where, however, as in the case of the railroads, such close and critical supervision is exercised by governmental authorities over accounting and finance, as well as over rates and other matters, it would seem that some adequate arrangement should be made with the Interstate Commerce Commission for the setting up of pension reserves, that the present generation may bear its fair share of these burdens.

Braking Power of Freight Cars

AFTER F. K. Vial, vice-president and chief engineer, Griffin Wheel Company, had presented his excellent paper, entitled "The Standardization of Braking Power of Freight Cars," at the thirty-fourth annual convention of the Air Brake Association, held last year at Washington, D. C., the association appointed a committee of eight to analyze the paper and submit a report of findings at the next convention. This report was presented at the convention at Detroit last week. In it, the committee vetoed Mr. Vial's recommendation that cars with steel wheels should have a braking ratio 25 per cent higher than those having chilled iron wheels; it went on record as in favor of his suggestion that the proper lever dimensions be shown on the car, and opposed his recommendation that the braking power of cars of any capacity should have a much smaller range than indicated by the extreme variation in weights of cars of that capacity.

The principal objection to Mr. Vial's third recommendation was his use of the term "braking power" as opposed to the term "brake shoe pressure" proposed by the committee. A considerable portion of the committee's report was devoted to the discussion of the definition and use of these two terms and also of the term "braking ratio" with respect to this particular subject.

Although there appeared at first to be some difference of opinion as to the use of these terms, the discussion soon revealed the fact that both parties were essentially in agreement as to what these terms represented. This disposition to quibble tended to weaken what was an otherwise highly constructive piece of committee work.

Undoubtedly, considerable of the data on which Mr. Vial based his calculations needs to be brought up to date. Further facts are needed as to coefficients of friction for brake shoes than those provided by the University of Illinois' tests which were made years ago. The tests made by Professor Rubenkoenig at Purdue University in 1923 were not sufficiently broad in scope to meet the conditions of the problem at hand. Data obtained from tests, however, cannot be wholly disregarded because the results do not picture in every detail the conditions encountered in actual service. Tests can be made, and are made, that closely duplicate actual operating conditions.

The results of the committee's work which are summed up in the five recommendations at the end of its report, published in last week's issue, should receive prompt and serious consideration by the Mechanical Division, A.R.A. The recommendation to secure a plate to each car showing the correct brake lever dimensions is an excellent one and, if carried out, should be of real assistance in making correct repairs, especially to foreign cars, and maintaining correct brake lever ratiios for all cars.

Credit is due the committee and Mr. Vial for the work they have done in advancing this problem toward a solution. Maintenance of correct braking leverages on all freight cars in service should do much toward reducing wheel failures. The committee's closing statement, "The wonderful improvement that has recently been achieved in the condition of the air operating devices, should be followed by an equally effective improvement in the maintenance of foundation brake gear," clearly sums up the situation. Such an improvement means a real saving in money, not only from wheels failing in service, but also from damage claims resulting from rough handling.

Prices of Railroad and Industrial Stocks

IT is gratifying that the stocks of many railways are now selling at prices which make it possible for them to raise part of the new capital they require by the sale of stock, but these prices are a real embarrassment to those who discuss the railroad situation on behalf of the railways. The management of an industrial concern does not have to worry about what the public will think and do if the market price of its stock goes far above par; but when the stocks of a good many railways advance to well above par many persons begin at once to suspect that the railways are making too much money. A question very often asked now, when statements of fact are made about current railway earnings, is as to why stocks are selling at such comparatively high prices if earnings are not good.

Apparently it is true that railway stocks generally have been selling recently at the highest level in history. But the advance above the previous high record is much smaller than most persons seem to believe; and the advance that has occurred in the prices of railway stocks, both recently and during the last two decades, has been much smaller relatively than the advance in the prices of industrial stocks.

The Dow-Jones stock price averages offer the best basis for comparisons. They are given in the recently issued revised edition of William Peter Hamilton's book, "The Stock Market Barometer," for every month from January, 1897, to the end of 1927, and were brought up to March 31, 1928, in an article in a recent issue of the Wall Street Journal. The averages given are for twenty representative railroad and twenty representative industrial stocks. The twenty railroads the prices of whose stocks are included are most of them much more prosperous than the average railway, and therefore their average prices always are much higher than the average prices commanded by the stocks of all railroads.

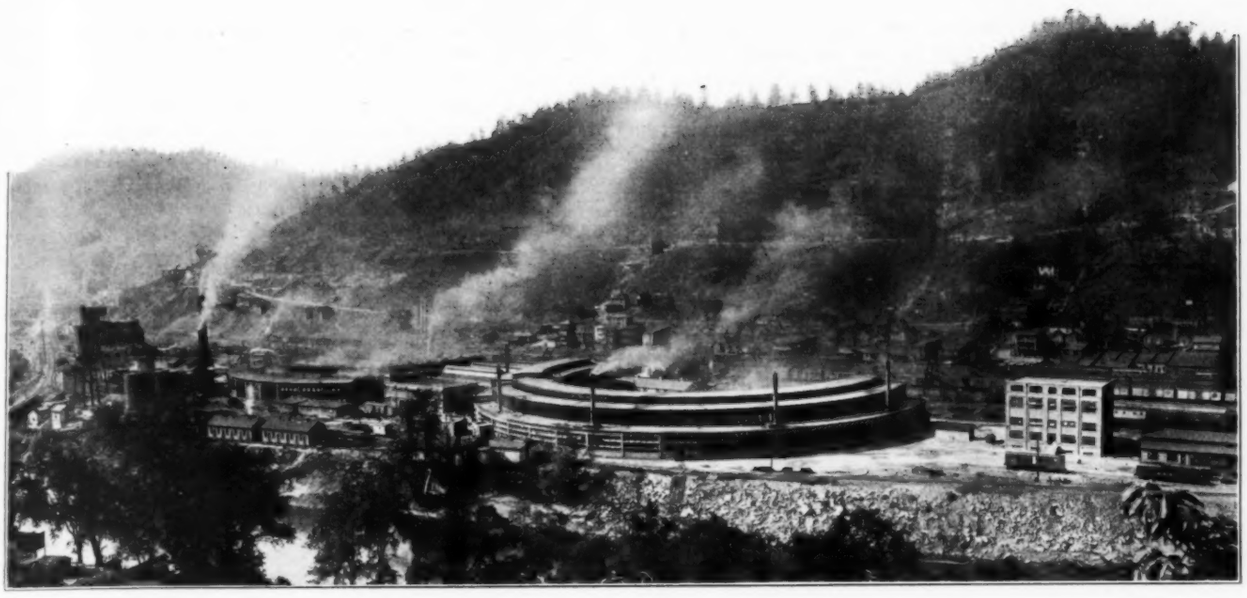
Until very recently the prices attained by railway stocks in 1906 were the highest in history. This is significant, because it was in that year that effective federal regulation of railways was begun. In each instance in which an average price is mentioned in this editorial it will be an average of the highest daily prices in the month mentioned. Between January, 1897, when the country began to recover from the effects of the panic of 1893, and January, 1906, the average price of the railroad stocks included in the Dow-Jones index advanced 157 per cent and the average price of industrial stocks 138 per cent. In January, 1906, the average price of the railroad stocks was $138.36. On March 20, 1928, it was $140.92. This was an increase in over twenty years of effective government regulation of less than two per cent. What happened, meantime, to the prices of the stocks of the twenty representative industrial corporations? The average for them in January, 1906, was $103, and on March 20, 1928, it was $214.45, an increase of 108 per cent. In other words, prior to effective government regulation of the railways the prices of their stocks advanced more than those of the industrials, while under effective government regulation of railways the prices of their stocks have advanced hardly at all, while those of industrials have more than doubled.

It is interesting to compare changes in stock prices during shorter periods. The Dow-Jones index indicates that from the beginning of 1906 to the beginning of 1918, when government operation of railways began, the average price of railway stocks declined 41 per cent, while the average price of industrial stocks declined 22 per cent. Prior to 1918 the average price of railway stocks was usually higher than that of industrial stocks, but this has never been true since 1919 excepting in 1921. The advance in railway rates made in 1920 was in effect throughout 1921, while in the latter year industrial corporations suffered from the effects of a collapse of commodity prices. In 1922 freight rates were reduced, while prices of commodities advanced, and since then the prices of industrial stocks always have been higher than the prices of railway stocks and the difference between them has constantly been increasing. The present "bull" movement in the stock market has been under way since the early part of 1924. In January of that year the Dow-Jones index for railway stocks was $83.06, or 40 per cent less than in 1906, while the average for industrial stocks was $100.66, or almost as high as in 1906. From that time up to March, 1928, the increase in the average for railway stocks was 70 per cent, while the increase in the average for industrial stocks was 113 per cent.

The effects produced by the way the railways were regulated before the war, and by government operation and its aftermath, are reflected in the changes in the average prices of their stocks. The general trend was pretty steadily downward from 1906 to 1915. In the latter year, when a record mileage was placed in receivership, the Dow-Jones average for railway stocks was 32 per cent less than in 1906.

It increased in 1916 and 1917, when earnings improved, but between January, 1917, and January, 1918, in the latter of which months government operation began, it declined from $105.76 to $81.03, or 23 per cent, and it continued throughout the next seven years, or until the beginning of 1925, to be about this much lower than in 1917.

Probably the truest measure of the prosperity of an industry is the return earned upon the total investment in it. The average earned by the railways on their property investment in 1927 was 4.4 per cent, which was less than was earned in 20 out of the immediately preceding 27 years. Why, then, have railway stock prices recently reached new high levels? First, because ever since 1911 the railways have been paying dividends which in comparatively good years have been small in proportion to their net income, and ploughing substantial amounts of earnings back into the properties without capitalizing them, with the result that their net income per share of stock has increased more in proportion than the return earned upon their total investment. Secondly, because of unusual financial conditions during the last four or five years which have caused the prices of all kinds of securities to advance phenomenally. If the advances in security prices had been due entirely to general financial conditions, the prices of railway stocks would have increased relatively as much as the prices of industrial stocks. But, as has been shown, for more than twenty years, and especially within the last four years, the increases in the prices of industrial stocks have been relatively much greater than the increases in the prices of railroad stocks. The explanation of this is to be found in the fact that since 1906 the prosperity of industrial corporations has been much greater than that of railroads and they have been able to pay investors in their securities larger returns and, also, to hold out to them more alluring prospects of future earnings and dividends.



Looking over the Williamson Engine Terminal from the South Side of the Tug River

Norfolk & Western Enlarges Facilities at Williamson, W. Va.

Spends several millions for terminal improvements and in altering river channel and mountain side for increased yard area

AS PART of its extensive program of improvements during the last eight or ten years, the Norfolk & Western has included the enlargement and rearrangement of its more important terminals in order to speed up its traffic and to utilize its enlarged roadway facilities more fully. Some of the most extensive improvements of this character that have been carried out at any one place on the system have been at Williamson, W. Va., where during the last four years several million dollars have been expended to enlarge the yards and engine terminal.

The Williamson terminal was constructed about 30 years ago, with limited facilities in the way of both shop buildings and tracks. Since its construction, additional improvements have been made from time to time as the increased development of westbound coal traffic from West Virginia and Kentucky coal fields required, but this development has been so rapid during the last ten years that in spite of the improvements made, the facilities at Williamson became seriously inadequate.

Originally, most of the coal traffic of the N. & W. moved eastward to tidewater, but during the last eight or ten years, the westward movement has been increasing so rapidly that at present by far the largest amount of coal is now being carried westward. With this shift in the direction of traffic, Williamson has become the assembling and forwarding point for westbound coal from the mines located in the Pocahontas and Tug river coal fields, and likewise, the point for the classification of empty coal cars on their return to the mines.

In undertaking the improvement of the facilities at Williamson, which included new shop buildings and engine terminal facilities, the rearrangement of the old tracks and the addition of new trackage sufficient to nearly double the capacity of the terminal, a number of unusual difficulties were encountered, the most serious of which were due to the location of the terminal itself. The Williamson terminal lies on the north side of the narrow crooked valley of the Tug river, which forms the boundary between Kentucky and West Virginia, and is hemmed in by the river on the south and by high mountains on the north. The first problem encountered in enlarging the track facilities was therefore, that of providing additional level ground area. To do this it was necessary either to change the course of the Tug river on the south or to cut away the mountain side on the north. The Norfolk & Western found it advisable to do both. On the south side it moved the channel of the river over into Kentucky for a distance of about 3,000 ft., and in providing the new channel with a minimum width of 200 ft., it moved approximately 640,000 cu. yd. of material. This change made available a large area of land on the south side of the yard, which was brought up to grade by material secured in cutting the new channel.

On the north side of the old layout where it was desired to construct additional tracks, it was necessary to cut back into the face of the mountain for 100 ft. or more, and to relocate a main road high up on the

mountain. In carrying out this work, which required a maximum cut of about 80 ft. for the roadway change, and of about 100 ft. for the additional yard area, approximately 318,000 cu. yd. of material was removed, consisting almost entirely of solid sandstone. Practically all of the grading was in the east half of the

Looking Over One of the Leads to the New 23-Stall Engine House

terminal, while the track work extended throughout its entire length of about three miles, affecting nearly all of the existing tracks in some form or other.

Large Improvements Began in 1921

The engine terminal at Williamson is confined within a distance of approximately 3,000 ft. in the west half of the terminal layout, and here the improvements made were largely in the form of additional engine, shop and office facilities. The first of the more recent extensive improvements at this point was started in 1921 when a number of tracks were rearranged, and when two 750-ton coaling stations were remodeled into one modern facility with a capacity of 1500 tons. Other new facilities were undertaken in close succession, some of the more important additions during the next few years being a complete water softening plant with a capacity of 100,000 gal. per hour and a tank for 200,000 gal. still storage, the enlargement of the old 22-stall, 87-ft. roundhouse so as to make 11 of its tracks 120 ft. long., and the installation of a 115-ft. balanced turntable in connection with an additional engine house then under design. Other improvements made during this period included new ash hoists and inspection pits, an engine washing platform for the use of locomotives served by the old engine house, and a number of auxiliary facilities for various purposes.

Since the beginning of 1926 other additions have been completed at Williamson, including a 23-stall, 130-ft. engine house, a large yard and shop office building, a machine shop, a storehouse, an oil house, a welding shop, an electric repair shop, a pipe, tin, carpenter and paint shop, additional ash hoists and inspection pits in connection with the new engine house, an additional engine washing platform, and minor facilities such as wash and lavatory buildings, laborers' houses and material storage sheds. These made necessary extensive changes and additions in track facilities. In addition, changes have been made in the passenger station facilities in the town of Williamson, approximately ½ mile west of the engine terminal.

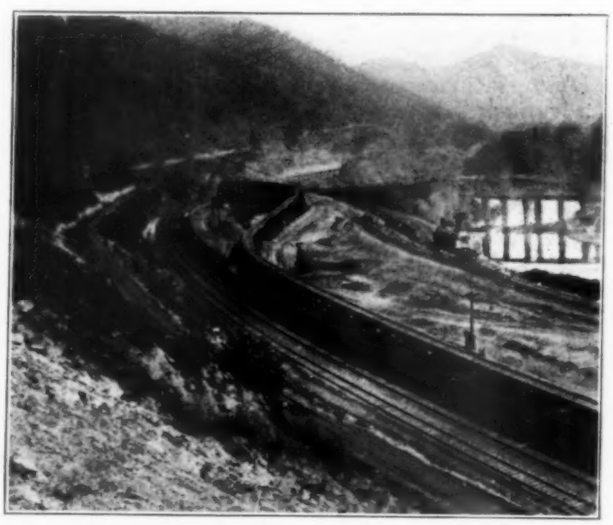
General Layout of the Williamson Yard

In general, all westbound freight movements through Williamson are handled in yard units along the north side of the terminal and all eastbound movements along the south side of the terminal. Passenger trains operate over tracks along the extreme north side of the terminal layout. Westbound freight trains enter Williamson over a long pull-in track which leads into a westbound receiving yard of 12 tracks with capacity for 1223 cars. This yard, which until its recent enlargement held only 724 cars, is used primarily for receiving and assembling loaded coal trains which are made up at Williamson with little classification.

Most of the westbound car classifying that is carried out at this point is done over a new hump track with a new 200-ton track scale for motion weighing, immediately south of the westbound receiving yard. Connecting with the hump track to the west, is a miscellaneous yard of six tracks for westbound freight, with a total capacity of about 300 cars. Both this yard and the westbound receiving and assembly yard have outlet to the west over newly rearranged tracks in the vicinity of the passenger station.

Eastbound trains are received at Williamson over an eastbound pull-in lead which diverges just east of the passenger station into two main routes, one leading to the north of the engine terminal for time-freight trains, and the other to the south of the engine terminal for trains of empty coal cars. The more northerly lead connects with an eastbound time-freight yard which has six tracks, each with a capacity of about 80 cars. The eastbound lead, which swings to the south of the engine terminal, connects with an eastbound yard with 24 tracks, having a total capacity of 2430 cars. Six of the tracks in this yard range from approximately 3,000 ft. to 4,000 ft. in length, while the other 18 vary from about 5,050 to 5,500 ft. in length. In this yard empty coal cars are made up into trains for distribution to the various fields on the Pocahontas division, which extends about 100 miles eastward to Bluefield, W. Va. This yard also affords ample storage space for empty cars during slack periods and thus precludes congestion on sidings and other auxiliary tracks on the line.

Another principal yard unit at Williamson is a load-



This 1600-Ft. Temporary Trestle Precluded Main Line and Yard Interference in Handling the Rock Excavation

ed car repair yard which is being constructed north of the center of the westbound yard, on the extreme north side of the terminal layout. This yard, the grading for which has been completed, will have six tracks with

a total capacity of 120 cars, and will be supplemented by a machine shop and office building, a storehouse and oil and paint shop building, a boiler house, and a toilet, wash and locker building.

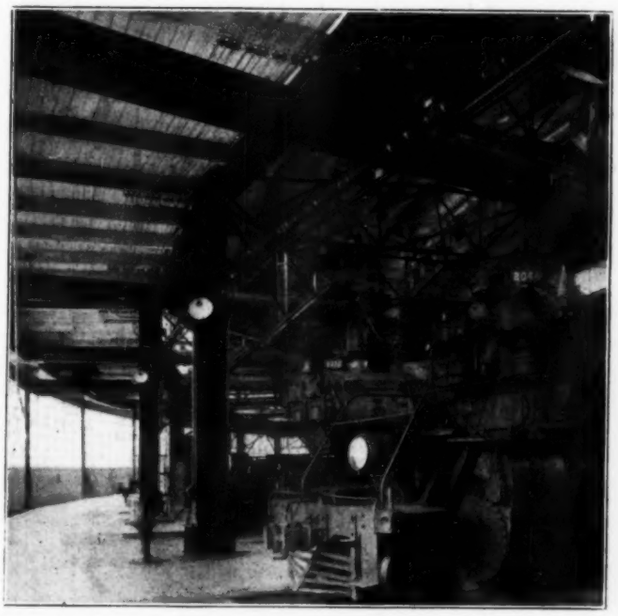
At the extreme east end of the eastbound coal yard, between the Tug river and the eastbound yard and yard leads, another important yard unit is under construction. This is a car repair yard of 14 tracks for all classes of light and heavy repairs, which, when completed, will have capacity for about 205 cars. The buildings planned at this point include a large fabricating shop, a wheel shop, a storehouse, an oil and paint house, an acetylene plant, and a number of smaller auxiliary buildings. Plans also call for the installation of two 30-ton traveling gantry cranes over the heavy repair tracks, although these facilities, as well as the tracks and buildings, will be constructed only as circumstances require.

Channel Change Involved Heavy Grading

It is impossible within the scope of this article to describe in detail all of the track work and grading operations which have been carried on at Williamson as this work has extended over a distance of more than three miles, and has included the laying of approximately 25 miles of new tracks, the relining of at least as many miles of old tracks, the installation of over 125 new turnouts, and the handling of about 1½ million yards of grading. The most difficult part of all of this work was the widening out of the yard area at the east end of the terminal for the enlargement of the eastbound yard, and the grading for the new loaded car repair yard. Prior to the work at this particular point, the Tug River channel, in a long swing to the north, crowded the Norfolk & Western's tracks into a narrow roadway along the face of the bold rock cliffs on the north side. When the road was finally forced to enlarge its yards it was necessary therefore to move the river channel to the south to secure additional room, and to cut away the mountain on the north to secure additional space and filling material for the new yard construction. In making the channel change, a maximum width of about 400 ft. was secured for yard facilities. In this change one point was occupied by a number of private dwellings, about 20 of which had to be torn down and rebuilt in new locations.

A Section of the Machine Shop Showing the Unusual Daylighting Effected

The actual work of cutting the new channel was of more interest because of its magnitude than because of the difficulties involved, although floods and rapidly rising water in the new channel caused serious delays in the work. On several occasions the water rose to a height of about 27 ft., completely submerging the contractor's shovels and locomotives. In excavating the new channel, which consisted almost entirely of earth, the problem was primarily one of removing the material from the new channel and placing it in the old channel to widen out the yard area.



Interior of the New Enginehouse Showing Details of the Mechanical Exhaust System Installed

In handling this work a temporary trestle was constructed across the old channel at the east end of the channel change, and over this the work trains carried the excavated material for widening out the fill in the old channel. Most of the new fill was made by dumping over the side of the embankment and then shifting the track out with a Nordberg track shifting machine. However, throughout about 1600 ft. at the west end of the channel change, where the new fill forms the north bank of the new channel, this method of filling had to be suspended for a time, owing to the fact that the soft filling material was washed away by the current in the river almost as soon as put in place. To preclude this washing it was necessary, during periods of low water, to build up the north bank of the new channel with heavy rock secured from the mountain side, and then to fill in behind it with earth by the usual method of side dumping.

Mountain Side is Cut Back 200 Ft.

On the north side of the tracks, the excavation for the additional yard area was of an entirely different nature than the channel work. Here it was a problem of removing a solid sandstone cliff. In this work, which required the removal of approximately 318,000 cu. yd. of rock, the cut reached a maximum height of about 100 ft. and the mountain side was pushed back a maximum of about 200 ft. In utilizing the new area provided east of Sycamore creek, the main tracks and engine leads were moved as far to the north as possible and the remaining space, southward to the new river

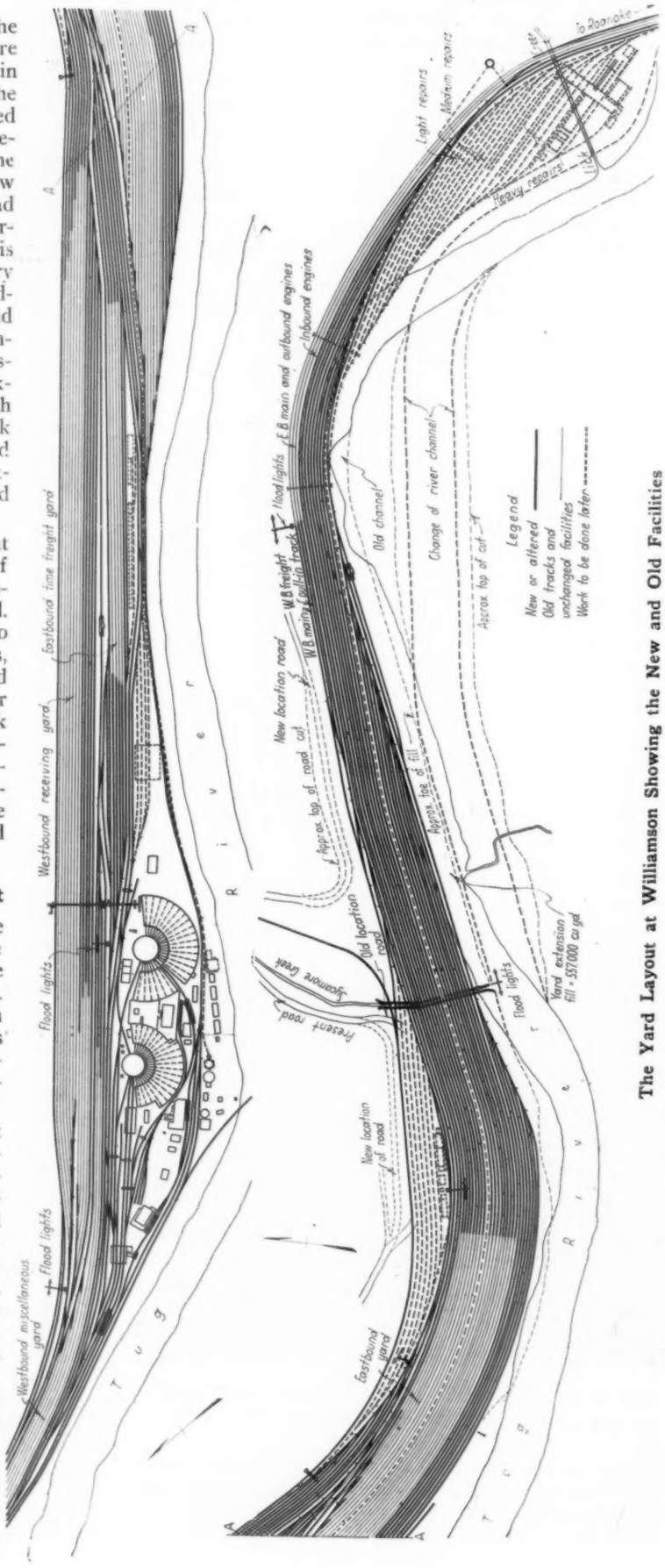
channel, was used for the extension of the eastbound coal yard. West of Sycamore creek, the east and westbound passenger main alone was shifted to the north side of the new cut and the additional area provided was laid out to form the new loaded car repair yard. All the material removed from the mountain side was used in filling the new yard area south of the old tracks and had to be moved across the yard without interruption to main line or yard operation. This was accomplished by building a temporary track, approximately 5,000 ft. long, extending along the north side of the tracks and up into the valley of Lick creek to a connection with a 1600-ft. temporary frame trestle which crossed the main tracks and extended thence to the yard level on the south side. Through this arrangement the work of the contractor was greatly expedited and the 318,000 cu. yd. or more of rock excavation were transferred to the new yard fill without mishap or delay to traffic.

In handling the excavation and filling at Williamson the equipment used consisted of five railroad-type shovels with 1½-yd. dippers, five caterpillar-type shovels with ¾-yd. dippers, two Jordan spreaders, from six to eight locomotives, and 72 side dump cars, consisting of 30 and 20-yd. Koppel cars and 16-yd. Kilbourne & Jacobs cars. Other equipment used in connection with the work consisted of the Nordberg track shifting machine and a complete Ingersoll-Rand stationary compressor outfit operating 18 jackhammers and two well drills. Throughout the major part of the work the force employed ranged from about 240 to 300 men.

Terminal Coaling Facilities Are Rebuilt

As indicated earlier in this article, the channel change, the mountain cut, and the extensive yard work were only part of the major improvements made at Williamson. The other main improvements were within the engine terminal itself where new facilities were added and where practically every existing facility was enlarged or altered to increase its capacity.

One of the first major improvements at the terminal was the rebuilding of two 750-ton steel coaling stations into a modern structure of 1500 tons storage capacity. As rebuilt, this coaling plant was located toward the west end of the terminal and was provided with concrete storage bins and with modern distributing conveyors, screens, a crusher, etc., for preparing coal for the use of both stoker and hand-fired locomotives. This station, which serves four tracks, is supplied with coal by a 1,000-ft. aerial tramway, which extends from a tipple at the road's own mine located just across the Tug river. The coaling station can also be supplied with coal from cars through the installation of a Roberts and Schaefer skip hoist which operates in a vertical tower at one side of the station, and which is fed from a track hopper and concrete bucket pit.



The Yard Layout at Williamson Showing the New and Old Facilities

In connection with the coaling station, which serves two outbound and two inbound engine leads, two well lighted and drained concrete inspection pits were constructed on the inbound leads, about 200 ft. west of the station, and similar inspection pits were constructed on the outbound leads about 200 ft. east of the station. In this latter vicinity, four ash hoists were also installed, serving all of the principal tracks to and from the engine houses. All of these hoists are of the Norfolk & Western type, one of them serving three tracks, two serving two tracks each, and the fourth serving a single track.

The New Enginehouse

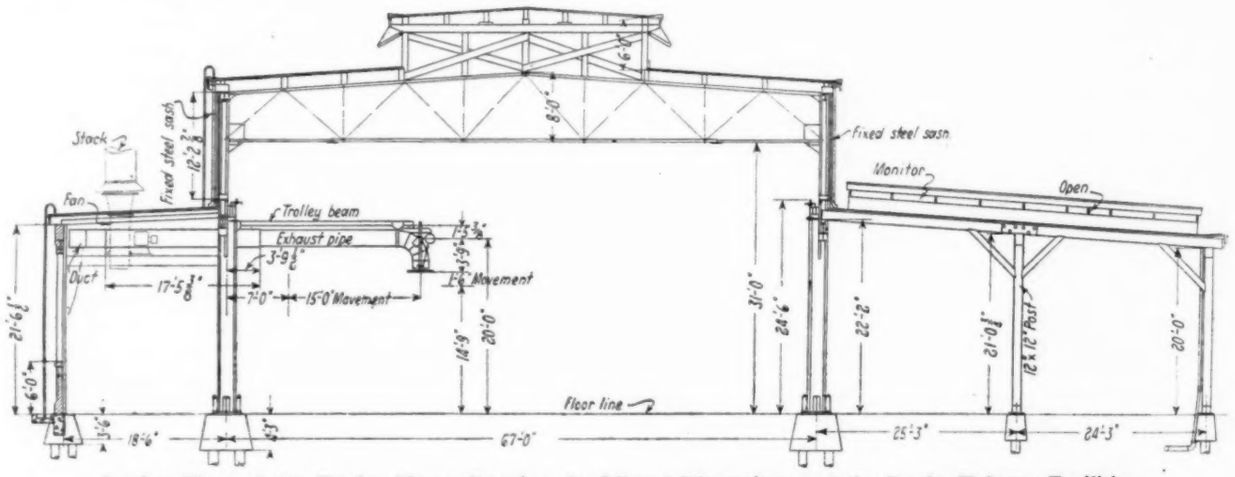
About the time that these various facilities were being installed, a 33-ft. extension was made to 11 stalls of the existing 87-ft. roundhouse at Williamson and work was started on a new 130-ft. engine house immediately east of the existing house. The new engine house, which has 23 stalls, is a modern brick and steel frame structure, with interior supports and trusses constructed of copper-bearing steel, resting on timber piles and concrete footings. The exterior walls are of brick with extensive areas of steel sash, and the roof is of timber, protected by Barrett built-up roofing. The doors of the house are of the vertical rolling wooden type, furnished by the J. G. Wilson Corporation, Norfolk, Va.

This house, which is provided with a flooring of well tamped chats, is of more or less usual design, and is divided into two sections by an inbound lead from the rear, one of the sections having 17 stalls which are used for light repairs, while the other has six stalls, which are used primarily by engines requiring heavy repairs. Every stall in the house is equipped with a concrete engine pit, fully drained and ventilated, and in addition, four of the pits in the heavy repair section of the house are equipped with Whiting drop tables, and the two remaining pits in this section with Norfolk & Western jacks. All of these pits can handle engine and trailer trucks as well as drivers. In the light repair section of the house, four tracks are fitted with drop pits and jacks for handling engine and trailer trucks only. In addition, each section of the house is fitted with a 10-ton Whiting overhead crane which spans the full width of the center bay and operates throughout its entire length.

The house is heated by means of unit heaters installed between alternate pits near their outer ends. These heaters are supplied with steam from the terminal power plant and, by means of 24-in. main ducts with 12-in. laterals extending between alternate stalls, supply fresh heated air to each pit.

Special Exhaust System Keeps House Free From Gases

One of the special features incorporated within the engine house is the smoke exhaust system. In this system each stall is fitted with a long, two-section, overhead exhaust duct, about two feet in diameter, which extends in a horizontal plane directly over the pit track, from a collecting duct around the rear of the house. The forward section of this exhaust duct is supported over the track by a horizontal beam, and telescopes within the rear section through a distance of 15 ft. The extreme forward end of the duct is fitted with an elbow, from the lower end of which a drop plate attached to a short section of duct can be moved vertically through a distance of 18 in. to make direct contact with engine stacks. Through this arrangement the exhaust system is suited for various heights of stacks and does not require the exact spotting of engines within the house. Similarly, it permits the shifting of a locomotive through approximately 15 ft. while repairs are being made, without disturbing exhaust or drafting operations.



Section Through the Engine House Showing the Liberal Dimensions and the Smoke Exhaust Facilities

As arranged throughout the house, the exhaust ducts of four adjacent stalls are operated as a unit and each unit is equipped with an exhaust fan, an arrangement which makes it necessary to operate the exhaust system only on those tracks which are occupied. With this system engine gases are practically excluded from the house, firing-up operations are greatly expedited, and in addition, a means is provided for creating an induced draft in the fire boxes of hot engines, thereby making it possible for fire-box inspection to take place in a very short time after the fire has been drawn.

Another interesting feature in connection with the ventilation of the new engine house is the small open-sided monitors which have been provided directly over the tracks in the approach lean-to section of the house to carry off the gases of entering and leaving locomotives. These small monitors are in addition to the large monitor over the center section of the house, which effectively clears the main part of the building.

The new machine shop at Williamson is a steel frame

structure, about 126 ft. long by 100 ft. wide, located directly between the two engine houses where it is accessible to both. Both the front and rear faces of this building are of brick, while one of the side walls, which also forms the outer ring-wall of the 130-ft. engine house throughout the width of the shop, is made up entirely of 22-gage corrugated, galvanized, copper-bearing steel siding, fitted with extensive sections of steel sash and frosted wire glass.

The roof of the machine shop is of the saw-tooth type, fitted with both fixed and top-hung steel sash, and the flooring is built up of creosoted wood blocks. Like the new engine house, this shop is heated by unit heaters, although in this case the heaters are placed about the center of the shop at the floor level and discharge their heat in four directions. The equipment within the shop, in addition to a five-ton Whiting crane which operates across one end, consists of a complete layout of modern machinery for carrying on all of the classes of repair work handled at the terminal.

Another large unit constructed at Williamson is the new storehouse, which is a two-story, reinforced concrete structure, 100 ft. long by 50 ft. wide. This unit, which lies directly back of the machine shop and between the engine houses, has brick panels in its exterior walls, concrete floors, a flat slab roof, steel window sash, and rolling steel trucking doors. Both floors of this building, with the exception of a small amount of office space on the second floor, are used for the storage of material and are equipped throughout with steel racks and bins. The handling of materials to and from the second floor is greatly facilitated by a three-ton elevator at one corner of the building.

The new oil house at the terminal is a one-story structure of the same type of construction as the storehouse and is 80 ft. long by 50 ft. wide. This building, which is almost surrounded by a wide concrete platform, is divided into three main sections, an oil room, a tool and supply room, and a waste room. A basement, which extends under the building, is used primarily for the storage of oil in large tanks; however, a small section of the basement is used for the storage of ice.

One of the most important additions to the engine terminal is the new office building which was constructed just west of the new engine house. This is a three-story structure, with an attic and basement, and is 73 ft. long by 43 ft. wide. The building itself is constructed of brick, steel and concrete, with concrete floors, plastered interior walls, chestnut trim and steel window sash. Within this building, which provides offices for the entire motive power force, the yard force, and a portion of the operating department at the terminal, the basement is occupied by lockers, wash basins, wash fountains and showers; the first and second floors are occupied by offices; while the third floor is occupied almost entirely by a large auditorium which is used generally by the terminal forces for meetings and recreational purposes. A special feature auxiliary to the new office building is a 400-ft. overhead suspension bridge which was constructed across the yard tracks at this point for the safety and convenience of employees in reaching the building and other terminal facilities from the north side of the yards.

The new water supply facilities at Williamson are located almost directly back of the engine terminal buildings, along the north bank of the Tug river from which the terminal water supply is received. This supply is furnished by three 1200 g.p.m. electric centrifugal pumps located in a waterproof concrete pump well which extends to a point near the water level. From the well the water is first pumped into a 200,000-gal. steel tank, 100 ft. high, from which it feeds by gravity through a water softener having a capacity of 100,000 gal. of treated water per hour. The treated water is stored in a 200,000 gal. steel tank, 50 ft. high, located adjacent to the water softener, and from this tank the distribution system radiates. With the special arrangement of piping installed at the plant, water may be by-passed around any one of the separate units if an emergency should arise.

Much Other Work Done at Williamson

In addition to the work already mentioned, many other additions and improvements were made at Williamson, the more important of which include a complete flood-lighting system for the terminal and yard-units, consisting of batteries of lights mounted on 110-ft. galvanized steel towers, three lavatory and wash room buildings for shop employees and trainmen, an electric repair shop building, an electric welding shop, an arch brick storage house, a pipe, tin, carpenter and paint shop, and a number of laborers' dwellings.

Still another major project undertaken by the Norfolk & Western at Williamson was the enlarging of its passenger station facilities west of the terminal. This involved the razing and the rebuilding of the brick passenger station and frame express building in new locations, the raising of the station tracks from 12 to 18 in., the reconstruction and lengthening of station platforms, and the construction of new train sheds.

The principal contractors and contracting companies on the extensive work at Williamson were Harry M. Waugh, Bluefield, W. Va., who did all of the grading and concrete work in connection with the enlargement of the Williamson yards, and John P. Pettyjohn & Co., Lynchburg, Va., and H. A. Lucas, of Bluefield, who handled practically all of the building construction. The track work in connection with the improvements was handled entirely by company forces under W. O. Franklin, division superintendent. All of the work at Williamson was done under the direction of W. P. Wiltsee, chief engineer of the Norfolk & Western, assisted by F. P. Turner, principal assistant engineer. The field work was in charge of J. W. Raitt, assistant engineer, and was supervised by V. D. Johnson, resident engineer. The buildings were designed by L. L. Kelly, bridge engineer.

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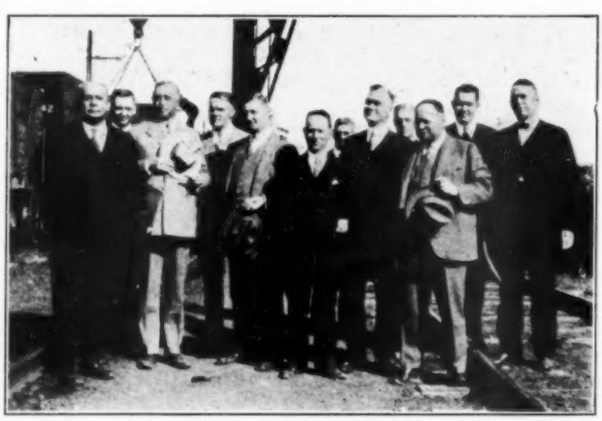


Officers of the Missouri Pacific Visit Reclamation Plant at Sedalia, Mo.

Those in the group are, left to right: L. W. Baldwin, president; P. J. Neff, general superintendent Eastern district; H. R. Safford, executive vice-president, Gulf Coast Lines; J. W. Rea, superintendent Eastern division: O. A. Garber, chief mechanical officer; J. T. Stinson, director of agricultural development; T. H. Harris, superintendent of reclamation; J. M. Hinman, district storekeeper; John Cannon, vice-president and general manager; H. L. Traber, general freight agent; L. P. Krampf, supply agent; S. O. Taylor, master car builder; J. W. Lemon, shop superintendent.

Congress, the Interstate Commerce Commission and the Railroads*

Announced policy of dealing with carriers not being followed—May lead to disastrous results

By Samuel O. Dunn

Editor of the *Railway Age*

THE time has come when we ought thoughtfully to compare the principles upon which our government regulation of railways is based with the policy being followed and the policy into which we seem to be drifting. The stocks of many railways are selling at the highest prices in many years. Railway service is good and adequate. But only five years ago prices of railway stocks were only about one-half as high as at present and freight service was inadequate, although railway net earnings actually were relatively as large then as they are now.

We should not allow ourselves to be misled by superficial appearances and temporary conditions. The advance in the prices of railway securities which has occurred recently has been due mainly to general financial conditions and speculation. Furthermore, the advance in them has not been anywhere near as great in proportion, either over a long period of years or recently, as the advance that has occurred in the prices of the securities of other corporations with which the railways must compete for new capital.

During the last 15 years, owing to the payment of small dividends and the investment of earnings actually belonging to the stockholders, the average investment represented by each share of railway stock in the hands of the public has increased 40 per cent, while the average price of the stocks of representative railways is only about 17 per cent higher now than 15 years ago. The prices of representative industrial stocks now average about 125 per cent higher than 15 years ago. Even since the depression of 1921, when the railway industry was almost bankrupt, the advance in the prices of railway stocks has been only one-half as great relatively as the advance in the prices of industrial stocks. Therefore, if the prices of securities are to be taken as a measure, they show that the railways have been and are now enjoying a much smaller degree of prosperity than other industries whose securities are bought and sold in the same markets.

No one knows how long the causes which have produced the present "bull" market will continue to operate effectively or would maintain the present prices of railway securities in the absence of better earnings. Our only safe course is to assume that it will be true in future as it has been in the past that the net return actually earned by the railroads will determine the capital they can raise and the service they can render.

Our Announced Policy of Regulation

It is a part of our announced policy of regulation to prevent unfair discriminations in rates. It is also our announced policy to prevent the average net return earned by the railways from being either too small or too great. The assumption is that the railroads and other public utilities are so different in their nature and in the character of the services they render from other business concerns that they should not be allowed to render their service just as they please, to fix their rates as they choose and thereby to make as large profits as they could. But the courts hold that their net return may not be so curtailed as to be confiscatory. In order to restrict railway profits, while avoiding confiscation, we have adopted definite statutory provisions to the effect that the railways shall be allowed to earn a fair return upon a fair valuation, consideration to be given, in determining what is a fair return, to the country's need for adequate development of its transportation facilities.

It is the American public that has announced this policy. It is a policy which Congress plainly has not the time, special knowledge or freedom from political influence to carry out fairly and constructively. Therefore, in theory at least, we have clearly divided the functions of regulation between Congress and the Interstate Commerce Commission. According to our generally accepted theory it is the function of Congress to pass laws stating the objectives of regulation and empowering the commission to adopt the means deemed essential to the attainment of those objectives.

We have created the commission as a quasi-judicial administrative body upon the assumption that its members will possess or acquire expert knowledge of transportation matters, and will, after hearings in each case arising under the regulatory laws, impartially render decisions that will give full effect to both the letter and spirit of applicable constitutional and statutory provisions. Opportunity is afforded for appeal to the courts by those who do not believe that the commission has correctly and justly interpreted and applied these constitutional and statutory provisions in particular cases. Members of the commission must be appointed by the president and confirmed by the Senate, and it is assumed that the functions of appointment and confirmation will be performed in accordance with the supposed general fitness of the candidates.

Is the Announced Policy Carried Out?

Is the general policy of regulation I have outlined being consistently fairly and constructively carried out?

In 1913 Congress passed a law authorizing and directing the Interstate Commerce Commission to make a valuation of all the railways. The ostensible purpose was to establish a basis for the regulation of rates. The real purpose was to establish a basis and measure for the regulation of railway net return. But the regulation of rates involves much more than so adjusting them as to produce a net return. They must be relatively just and reasonable for different distances and commodities or they will be unfairly discriminatory. They must be made high enough to provide sufficient earnings to pay operating expenses and taxes, as well as a return on investment or valuation. At present it takes more than

* An address delivered before the Transportation and Communication Department of the Chamber of Commerce of the United States at Washington, D. C., on May 8.

80 per cent of the total earnings to pay operating expenses and taxes, both of which have more than doubled since before the war, and to the increases in which is entirely due the necessity for the difference between the pre-war and present levels of rates.

The valuation authorized seven years before not being finished in 1920, when the railways were returned to private operation, Congress then directed the interstate Commerce Commission to use the information it had already gathered and make a tentative valuation as a basis for determining temporarily what would be a fair return for the railways as a whole, or in such groups as it might divide them into, and to so adjust their rates as to enable them to earn, as nearly as might be, the return held by it to be fair. In no year have the railways as a whole earned the 5¾ per cent on their tentative valuation that the commission held in 1922 would be fair and in the public interest. The return actually earned on this basis during the last seven years has varied from 3.08 per cent to 5.5 per cent, has averaged 4.6 per cent, and in 1927 was 4.75 per cent. None of the three large territorial groups of roads has earned the so-called "fair return" as an annual average, and the western group has constantly fallen far short of it. The tentative valuation, including investment made since 1919, is less than the reported investment of the railways in their properties, and therefore the percentages earned on property investment have been less than the figures I have given. The railways, especially those of the western district, have sought advances in rates since the large reductions made in 1922, but thus far have not got them.

In other words, although it is understood to be a fundamental principle of our policy of regulation that, while the net returns of the railways shall be restricted, they shall at the same time be given opportunity to earn a fair return, and although the courts hold it is unconstitutional confiscation to deprive them of a fair return, and although it is provided by statute that they shall be allowed to earn it, the Interstate Commerce Commission has thus far failed to let them earn what it has itself held would be a fair return upon its own basis of valuation.

It is well known that the railways formerly contended that their rates should be based on "what the traffic would bear" and opposed regulation of rates obviously aimed at limitation of their profits. It is well known they have always claimed that the tentative valuation of their properties made by the commission was too low. It would appear that the principles and methods adopted by the commission in its decision in the O'Fallon case would result in a valuation approximately equal to its tentative valuation of 1919, plus investment since made, and it is well known that the railways protest against a valuation made in accordance with these principles and methods upon the grounds, first, that it would not be in accordance with the law of the land as hitherto understood, and, secondly, that it would disregard sound economic principles and be inadequate as a measure of the return they are entitled to earn. I call attention to these facts now to emphasize that the railways have not only failed to earn what they claim they are entitled to, but even what the commission, by its own interpretation of the constitution and laws, has held them entitled to.

Pressure on Interstate Commerce Commission

It would perhaps be a poor defense of the commission to say that it has failed to perform its duty according to its own standards because of a belief on the part of a majority of its members that the public and Congress did not want it to do so. But undoubtedly the commission has been influenced by what it has believed to be the attitude of the public and Congress. Regardless of the fact that the railways have not been earning a fair return, measured by any standard, there has been incessant pressure for reductions of rates. Sometimes one, and sometimes both, of the branches of Congress have taken a hand in applying this pressure. Twice a bill has been passed by one house of Congress to abolish the surcharge on sleeping and parlor car tickets authorized by the commission. Three years ago, almost without consideration of its merits, Congress passed the Hoch-Smith resolution giving the commission notice that in regulating rates it should follow the policy of considering the conditions existing at any time in our various industries, and especially that, owing to the depression in agriculture, the lowest lawful rates should be made upon its products. As a means of giving effect to this policy the commission was directed to make an investigation of the entire freight rate structure.

The law previously directed the commission to make rates just, reasonable and non-discriminatory. Would not the passage of a bill abolishing the surcharge mean either that Congress did not believe the commission was making rates that were just, reasonable and non-discriminatory, or that it did not want such rates made? What, especially, did the actual passage of the Hoch-Smith resolution mean?

It can hardly be assumed it would have been passed if intended only to tell the commission to go on making rates in accordance with its own standards of justice and reasonableness as it had been before. It must have meant what it said—namely, that rates should be adjusted in accordance with the conditions in the various industries.

But what "conditions"? Every rational person must infer the reference was to conditions of depression or prosperity. In other words, the resolution meant that the commission should use its rate-regulating power to equalize, as far as practicable, the prosperity of the different industries that use railway service. But while our regulatory laws previously had assumed the commission would regulate profits in the railroad industry, they had not assumed or provided that it should regulate the profits of other industries.

Unsoundness of Hoch-Smith Resolution

The passage of the Hoch-Smith resolution disregarded every principle on which it was previously understood that our policy of regulation was based. It was an interference by Congress with functions for the performance of which the commission was expressly created. It contemplated rate-making in disregard of the standards of justice and reasonableness, because the profits or lack of profits being made in an industry or a part of an industry may be, and usually are, due to the way it has been managed and to economic influences and conditions of many kinds. The freight rates it pays usually are but a small part of its total operating costs. Therefore, to fix the freight rates of an industry in accordance with its condition of depression or prosperity, and in disregard of the major causes of that condition, and of whether freight rates had anything to do with it, would be wholly unsound as a matter of both public policy and economics.

The economic unsoundness of the Hoch-Smith resolution, and the way in which it was passed, make clear its true character. Our regulatory laws are supposed to be and, in the main, are based on certain economic

principles. The Hoch-Smith resolution was an attempt to cause rate-making for political purposes, regardless of these principles. Ostensibly the commission was to reduce rates on farm products and compensate the railways by advancing them on other commodities. There are, however, numerous railways of whose traffic farm products are such a large part that if the rates on them were substantially reduced it probably would be impracticable to reimburse them by advancing rates on their other traffic. Therefore, as to these railways the Hoch-Smith resolution contemplates violation of the principle that the railways shall be given an opportunity, under honest, efficient and economical operation, to earn a fair return.

The Interstate Commerce Commission, in the Lake Cargo coal rate case, gave the Hoch-Smith resolution as a reason, among others, for ordering a reduction of the rates from the Pennsylvania and Ohio mines and directing the maintenance of the rates from competing southern mines. Regardless of the merits of the decision in this particular case, the commission, in making it, acted merely in the performance of the main function for which it was created. But because Commissioner Esch voted for that decision he was placed on trial at the bar of the Senate and defeated for reappointment. Thus the Senate, contrary to the principles upon which our policy of regulation is based, in effect acted as a court of appeal and made a decision in a case in which it had not heard the evidence and arguments. Thus members of the commission have been warned that they may pay with their official lives for voting in particular cases contrary to the views of a majortiy of senators, although they will have no means of ascertaining what those views are until after they have voted. How can we expect men of ability to accept appointment on the Commission and discharge their duties in accordance with their best judgment if they are to be treated in this way?

Should Regulation "Make Good?"

Meantime, almost daily we see bills introduced in Congress the provisions of which are contrary to the principles to which it has heretofore been understood that our policy of regulation is to conform. A bill has been introduced virtually directing the commisison to reduce rates on grain. In order to prevent unfair discriminations the commission must have and exercise the power to fix minimum rates; but several bills have been introduced to deprive it of this power. Our policy of regulation is based upon the principle that, as the profits of railways are to be limited, they should be assured opportunity to earn a fair return on the fair value of their property. Section 15-A of the Transportation Act is merely a legislative declaration of this policy; and yet bills are constantly being introduced to repeal it and thereby, in effect, tell the commission that there is no limit to the extent to which it may reduce the return earned by the railroads as a whole, or groups of railways, unless and until it is restrained by the federal courts in confiscation cases.

Thus we find that our policy of regulation holds that the railways should be allowed to earn, on the average, a fair return, but that they have not been allowed to earn it; that, in disregard of this fact, there has been constant pressure from different parts of the public for reductions of rates; that Congress, for political purposes, has intervened by resolution to hamper the commission in applying its own standards of justice and reasonableness in fixing rates; that a member of the commission has been put to official death because he did not vote in a particular case to suit a majority of senators; and that legislation is constantly being promoted to cause regulation that would contravene the principles of public policy and economics upon which it has been understood that our policy of regulation is based. It may be answered that no real harm has yet been done. While they have been earning less than a fair return, the railways have been investing large amounts in the expansion and improvement of their properties and are rendering adequate service. The stocks of many railways are selling at higher prices than ever before. But is it unreasonable to ask whether these are good reasons why our announced policy of so regulating rates as to make them fair and non-discriminatory, and as to enable the railways to earn a fair return, should not be carried out? Is the fact that railway owners and managers have well and efficiently performed their duty to the public a reason why the rewards promised them by the public for doing so should be withheld? Is it not conceivable that the progress that has been made in improving the plants and service of the railways, and even the advances that have occurred in the prices of their securities, have been largely due to the expectation of railway managers and investors that the public, Congress and the Interstate Commerce Commission will "make good" on the policy of regulation announced, and that if they do not "make good" railway progress will be arrested and the prices of railway securities will decline? Why should any reasonable man assume that a clearly defined purpose on the part of the public, Congress and the Interstate Commerce Commission to regulate the railways indefinitely as they were regulated before the war would not lead to the same results as then—to the arresting of railway development and to car shortages such as we had from 1916 to 1920.

Where Are We Drifting?

But are we actually drifting in that direction? Past experience plainly indicates that within a few years railway service will cease to be adequate and satisfactory unless prevailing tendencies in our regulation of railways are changed. The average precentage of return earned by the railways as a whole on their property investment was less in 1927 than in any year since 1922, excepting 1924, and the decline of $150,000,000 in net operating income in 1927 was due only partly to the decline in freight business, as the freight business of 1927 was larger than in any previous year, excepting 1926. It was due in larger measure to causes that already were operating—to losses of passenger business, to high taxes, to slow but constant reductions of rates and advances of wages. Rates are regulated by the Interstate Commerce Commission. Wages are fixed largely by arbitration boards organized under the Watson-Parker Railway Labor Act. Both rates and wages were reduced in 1922 for the purpose of adjusting them to post-war conditions. But since 1923 freight rates have been "readjusted" downward to the extent of $150,000,000 annually; wages have been advanced $170,000,000 annually; taxes have been increased $44,000,000 annually; and the loss of passenger business that has occurred exceeds $100,000,000 annually. With one exception, I believe, every arbitration board organized under the Watson-Parker law has granted an advance in wages. The wages of many railway employees are now higher than they were in 1920 after the Railroad Labor Board had granted a general advance following the return of the railways to private operation.

Is it not about time we should recognize the fact that there is a limit to the rapidity with which railway wages can be safely advanced if railway rates are to be simultaneously reduced? Railway wages and railway rates are now regulated by different agencies, but surely the time must come when either the agencies organized under these different laws will be better co-ordinated or we will place the regulation of both wages and rates in the same hands. Not only are rates constantly being readjusted downward, but further reductions plainly are threatened under the Hoch-Smith resolution without any prospect of compensating advances being simultaneously made.

What have been some of the results of the tendencies that for some time have been prevalent in the railroad field? During the ten consecutive months ending with January the net operating income of the Class I railroads declined. In February the decline stopped. Why did it stop then? Statistics regarding the number of men employed within recent months help to furnish the answer. In December the railways had fewer employees than in any other month since August, 1922, during the nation-wide shop employees' strike. The number was further reduced in January and still further in February, in the latter of which months the total number of employees was 135,000 less than the average number in February of the five preceding years. Furthermore, the reduction in those engaged in maintenance work was relatively larger than in those engaged in other branches of the service. Railway properties are now in good condition, but what these facts mean is that most railways recently have been retrenching in expenditures for the maintenance of their locomotives, cars, tracks, terminals and other properties. When that policy is adopted it signalizes the beginning of a deterioration of railway plants and of a slowing down of railway improvements and expansion. When railway plants begin to deteriorate and policies of expansion and improvement are curtailed, we are beginning plainly to be threatened with less speedy, dependable and adequate transportation.

Business Conditions and Railway Service

Present general financial conditions, as indicated by the abundance of capital seeking investment, low interest rates and high security prices, undoubtedly are largely due to the huge aggregate reduction within the last five years of the inventories carried by business concerns. Billions of capital formerly tied up in inventories is now seeking investment in bonds and stocks. It is generally recognized that the reduction of inventories that has occurred has been made possible not only by improved business practices, but by the adequacy, dependability and speed of railway service within the last five years. Now let us suppose that the railways should be forced, by influences beyond their control, to follow during the next five years a different policy regarding improvements and maintenance from that which they have followed during the last five years. Let us suppose that instead of their net operating income increasing, as it did from 1921 to 1926, they should find that it was tending to decline, as it was from 1910 to 1915. Undoubtedly they would retrench in their expenditures for maintenance, and reduce their investment for expansion and improvements, as they did from 1911 to 1916. What would happen if there should then come a substantial and prolonged increase in the country's demand for transportation? Does not our experience for several years following 1915 indicate the correct answer?

It would presently be discovered by merchants and manufacturers, as it was then, that, owing to congestions on the railways, they were unable to get prompt delivery of goods and raw materials that they had ordered. Doubtless in consequence, they would increase the size of their orders for the purpose of increasing their inventories. This would increase the demands upon the already inadequate railroad service and reduce its dependability and speed. Such increasing of inventories might put up prices and it certainly would reduce the amount of capital seeking investment in the security's market and increase interest rates. But a reduction of the amount of capital seeking investment in railroad and industrial securities and an advance in interest rates would, of course, cause a general decline in the market prices of securities.

Is it unreasonable to assume that in the field of business the law of causation is still in effect, and that the same causes that produced certain effects from 1916 to 1920 would produce the same effects in future?

The Duty of the Public

If the public does not wish or intend to have carried out the policy of regulation it has announced it should make this fact clear in order that railway managers and investors may be governed accordingly. If the public does wish and intend to have that policy carried out it should see that political interference with the Interstate Commerce Commission by Congress ceases, and that the commission is left free to so regulate, and does so regulate, rates that they will be fair and reasonable as between different territories and classes of shippers and also such as to enable the railways as a whole, and by groups, over periods of years, to earn returns at least equal to those to which the commission itself holds they are entitled.

Adequate, dependable, and speedy railway service such as we now have is essential to sound industrial, commercial and financial conditions. We cannot long have such service unless the railways are both efficiently managed and fairly and efficiently regulated. The public having announced a certain policy of regulation, that policy ought to be consistently carried out until some other policy has been announced in its place. The policy actually announced is restrictive enough. The substitution for it in actual practice of a still more restrictive policy, is unfair to investors in railway securities and railway managers, a menace to our transportation service and a threat to the economic welfare of the country.

The remarks I have made may sound pessimistic. They are not intended to be either pessimistic or optimistic. They are intended to give a true picture of the policy of regulation actually followed during the last eight years, to indicate the reasons why that policy has prevailed and to call attention to influences that are tending to make it worse. I believe that these influences can be successfully combatted. I believe it is possible to establish and maintain a policy of regulation in accordance with the principles that rates should be made just, reasonable and non-discriminatory, and so adjusted as to enable the railways to earn, on the average over periods of years, a fair return on the fair value of their properties. I am sure, however, in view of past experience that such a policy will not be established and maintained unless the business interests of the country recognize that this is not being done and unite in combatting those who will constantly struggle, for their own purposes, to prevent it from being done.

R. A. O. A. Meets at Atlanta

Accounting officers approve energetic action in presenting railroads' side in I. C. C. accounting revision case —Stress reduction in overcharging

THE Railway Accounting Officers' Association held its fortieth annual meeting at the Hotel Atlanta Biltmore, Atlanta, Ga., on May 1-4 with an attendance of 325 members, 42 visitors and 250 members of families—a total of 617.

Outstanding subjects discussion of which held the attention of the delegates included: The matter of reducing overcharges and undercharges; a proposal to take complete wage statistics during four months of the year, i.e., January, April, July and October instead of for all twelve months; problems arising from the Interstate Commerce Commission's order increasing the classes of commodities in which freight tonnage is shown from 70 to 157 and adding the amount of freight revenue assigned to each class; and a question raised by the Purchases and Stores Division of the American Railway Association regarding the time of charging out materials and supplies—when shipped or when actually applied.

Harris Ewing

E. H. Kemper

As was explained in the report of the last annual meeting of the accounting officers (*Railway Age*, June 18, 1927, page 1948), prior to each meeting the secretary issues a book of Agenda (this year it had 289 pages) giving in detail the program of the meeting and the proposed report of each committee on each subject assigned to it. In this account of the meeting no attempt will be made to refer to the detailed recommendations contained in the published Agenda, except those on the most important matters, i.e., those provoking the most discussion. For the rest, the following account will concern itself mainly with those subjects and discussions not mentioned in the Agenda or instances of action at variance with that in the Agenda.

The actual opening of the railway accounting officers' convention is preceded by a day of committee meetings, during which every committee meets to give the various members an opportunity to attend and raise any questions or offer any criticisms either regarding its proposed report, as published in the Agenda, or on any other matter germane to its activities. Smaller groups, making for less formality and greater freedom of speech, it is found that some of the liveliest discussion of a convention takes place at these open committee meetings.

An outstanding instance of this developed at the meeting of the Committee on General Accounts. The report of this committee, when presented to the convention, was adopted without a dissenting vote. Nevertheless, at the pre-convention assembly of this committee two or three lively controversies developed—among them the proposed report of the Purchases and Stores Division to the effect that practice of accounting for material applied is not uniform, and another on the subject of the demands of different bureaus of the Interstate Commerce Commission for identical information. Details of these mooted questions will be found under the heading "Committee on General Accounts" on a following page.

The convention proper was called to order by President Kemper (comptroller, Southern) and, after the invocation, Governor Hardman of Georgia was introduced. The Governor welcomed the delegates to Atlanta and the state and was followed by Mayor Ragsdale of Atlanta, who performed a like office for the city. Dr. Julius H. Parmelee of the Bureau of Railway Economics then delivered an address and this was followed by the address of President Kemper. Abstracts of the last two appear on following pages.

Following these addresses names of visitors were read and, thereafter, communications from members unable to be present. After lively discussion a ballot was taken on the place of the next convention and the choice fell to Cleveland, O., date to be left in the hands of the executive committee.

The secretary then read a communication from Commissioner Eastman which contained a word of greeting and expressed a desire on the part of the Interstate Commerce Commission for co-operation by the association relative to testimony in the hearings on Ex Parte 91, the revision of accounting classifications. He assured the association that the effective date of the revised classifications would correspond with that of the order on accounting for depreciation.

Following the disposal of the preliminary business, reports were called for from the various committees, the executive committee being the first to be heard.

The report of this committee was largely a routine matter and was unanimously adopted. A resolution was

adopted pledging the association to vigorous participation in placing its views before the Interstate Commerce Commission in Ex Parte 91, the proposed general revision of accounting rules, including the employment of counsel and experts. A special committee was appointed to oversee the conduct of this case from the standpoint of the association, this committee consisting of the following: J. J. Ekin, comptroller, B. & O., chairman; T. O. Edwards, general auditor, S. P.; F. J. Fell, Jr., comptroller, P. R. R.; H. W. Johnson, comptroller, C. B. & Q.; E. H. Kemper, comptroller, Southern; W. B. McKinstry, comptroller, C. of Ga.; W. C. Wishart, comptroller, N. Y. C.

Honorary memberships were bestowed upon the following: J. H. Bradbury, former comptroller, C. & S.; R. M. Huddleston, former special agent, N. Y. C.; George Becker, former auditor of receipts, L. & N. (posthumous); Henry Lucas, former auditor, C. R. I. & P.; L. R. Powell, Jr., president, S. A. L.; Frank A. Clark, former general auditor, Erie.

Address of Dr. Parmelee

The title of the address of Dr. J. H. Parmelee, director of the Bureau of Railway Economics, was "By-Products of Railway Accounting." An abstract of his paper follows:

I ask you for a moment to relax from your more technical labors, and to consider with me certain aspects of your profession distinct from the task of recording the revenues and expenses of several hundred thousand miles of railway line.

These aspects may be regarded as the by-products of railway accounting. One of my bright young colleagues has named them "accounts elusive," as denoting those complicated but effective mosaics, pieced together from the results of property investment, construction, maintenance, transportation and other accounts, that are called on the one hand "history," and on the other hand "forecast," in so far as they portray the past or suggest the future.

Members of any given profession, such as yours, usually think of their work and measure its significance in terms of their ordinary daily activities. Considered from this technical point of view, the accounting department of any railway plays a most important part. The accountant first records and analyzes the service rendered by railways to the public; and second, he measures the financial results to railway owners, guarding their interests by protecting the revenues and checking the expenditures.

Service to the Public

The economic basis of the railway industry, so far as its relations to the public are concerned, lies in the extent of the service rendered. Without the accounting department, no one could know the amount or character of railway service. You report the number of trains operated for the convenience of shippers and passengers, the number of train-miles and car-miles, the number of tons of freight and passengers carried, and the distances through which they move.

You also record the charges made for transportation, the amount of revenues received, and the cost of the service. It is your duty to assemble and publish these facts, which are of vital interest to the public. In performing these several functions, you describe the character of the railway plant and the efficiency and economy with which that plant is operated. If transportation service is the economic basis of the industry, then your record of railway service to the public is the economic basis of railway accounting.

Service to the Owners

You protect also the interests of the railways themselves, that is, the investors in railway securities. Are the railway companies adequately compensated for the service rendered to the public? To answer this question, you maintain the record of railway finances, the income account, and the balance sheet. You analyze the sources of railway revenue and the channels of railway expenditure. From time to time you summarize and report the financial results of operation. If these results are good, it is your happy task to spread the records before the public. If bad, it is no less your duty to record the facts, and set them forth. This too is an economic phase, perhaps the most important phase, of railway accounting.

Accounting Development

Seventy-five years ago railroad men were debating the physical possibility of operating more than 500 miles of railway line under a single management. Many thought it impossible, while others regarded it as highly questionable.

Daniel Craig McCallum, general superintendent of the New York & Erie Railroad, at that time prepared a report which was a remarkable contribution to the railroad literature of its day. He pointed out that the superintendent of a line 50 miles in length could give its business his personal attention, but that the management of a road 500 miles in length represented a very different state of things.

He said: "In my opinion a system of operations, to be efficient and successful, should be such as to give to the principal and responsible head of the running department a complete daily history of details in all their minutiæ. Without such supervision, the procurement of a satisfactory annual statement must be regarded as extremely problematical."

The prophetic value of the McCallum report lies in its recognition of the fact that no large railroad system could be efficiently operated without, to quote him again, "a complete daily history of details in all their minutiæ"—that is, a complete system of accounts and statistics.

How the function of the accounting officers has developed from that of a mechanical recorder of facts to an interpreter of the meaning of those facts is an interesting and significant development.

Gradually, as the complexities of life have increased, it has become increasingly customary to turn to the accounting officer as an analyst, as an interpreter of the facts which he records, rather than as a mere machine to set down those facts.

Today the railways are conducting an intensive efficiency campaign. Under their program, the railway industry has pledged itself to improve the character and condition of its plant, and to increase its efficiency of operation. The operating side of the program can safely be left in the hands of your executive and operating departments. But the campaign will not be finished when the results have been achieved. The story of those results must be carried to the public and impressed upon their minds and imagination. Otherwise, a large part of the benefit to be derived will be lost.

There is tendency in some quarters to complain that the accounting department absorbs too great a proportion of railway revenue. I do not deny that regulation makes many burdensome demands, but the man who emphasizes this fact often overlooks another fact of great importance—the growing complexity of our economic and business life. Only through the maintenance of accurate records can the complicated activities of a railway be controlled. The work of the accounting department, as an economic necessity, is vital to the efficiency and the welfare of the railway industry.

What Are the By-Products?

In the manufacturing industry, we hear much nowadays about by-products. May we find some by-products, also, in the railway accounting field? The inquiry opens up some vistas of interest. Let us enter in the record a few of the principal by-products, grouping them under three general heads: Historical; social; and economic.

Historical

A railway official remarked to me the other day that all poetry had gone out of railroading. He meant, I take it, that operating a railroad has lost much of the romance that characterized it in the early days, and that we have brought it to a uniform, even though efficient, level of standardization.

Many will agree with this remark, while many also will disagree. Be that as it may, the history of railroading, and the things that are making history today, are full of the romance of the pioneer. It can never be taken away, no matter what the future shall bring. And that romance is portrayed not only in the narratives of the men who built our railways, not only in the history of their early operating achievements, but also in the record of those operations that is set down in the seemingly cold figures of the accountants. Seemingly cold, I say, but actually teeming with life and warmth and vividness.

Let us cast back a few centuries, and consider the part the accountant has played in the history of the world. Even in the Bible we find references to accounting, as in the case of the steward on whom the master called for a statement of

his accounts. It was no idle chance that the earliest organized European accounts were Venetian in origin. Merchant ships of Venice were the common carriers for an appreciable period in the Middle Ages. Venetian merchant captains brought back to Venice such improvements in methods as impressed them in their journeyings, among them the printing press, so that in 1494 there was issued from a Venetian press Paccioli's "Suma di arithmetica," one of the earliest works on accounting in existence.

One of these merchants of the Middle Ages—a Frenchman, Jacques Coeur—organized French commerce, transportation, and necessarily accounting, with a thoroughness and efficiency that helped to place his tottering nation on its feet. His motto was "To the Valiant Heart Nothing is Impossible." He was director of all the organized transportation there was in his day, he was a friend to Jeanne D'Arc, and, of course, he was subjected to government persecutions.

Perhaps the most famous diary in the world is that maintained by Samuel Pepys, Esquire, of London, during the ten years from 1660 to 1669. To this diary he confided a record of his daily activities in an interesting period of English history. In this same diary appear his personal accounts, which he balanced at the close of each year and so gained an idea of his financial and social standing. And no section of Pepys' Diary is of greater historical significance today than that part containing his financial accounts.

Account-books of individuals and organizations, both in England and during our own Colonial days, supply us with many human pictures of the social customs of those times. The historical value of these accounts is a by-product, but has become far more valuable than the original purpose for which they were kept.

The earlier accounts of the pioneer railway companies of the United States were set up for no other purpose than to disclose the financial success of the venture. Today that phase has largely disappeared, but their historical value remains and grows greater year by year.

So it is that sometimes we should step outside of ourselves for a moment, and look at our work in its relation to the history of our people. The future is ahead—the first thing we know it will be the present, and past experience tells us that it will soon be history. And in that aspect our railway accounting records will be among the most accurate histories of any period. In the same way, every record maintained by the railway accounting profession has a value far beyond its disclosure of present-day results.

It becomes a part of the historical record of the industry, and of the nation at large, whose value will in time outweigh the purpose for which originally set up.

Social

Some of the by-products of railway accounting are of a social type. What I have in mind is the extent to which the operating accounts and statistics of our railways supply information as to the broader aspects of human welfare.

Some of these aspects relate to the railway personnel themselves, some to the passengers and other customers of the railways, and some to the public at large.

Let us consider the social welfare of railway employees as revealed in your accounting records. First and perhaps foremost come the payroll records—those sheets that are prepared primarily for the purpose of an accurate statement of what is due each employee twice a month. But in drawing up those records, you are not only meting out justice to the employees, but are also creating an invaluable picture of railway wage levels, hours and earnings, and the kind of occupation according to which railway employees are classified. Our wage statistics supply a mine of information for the sociologist and the social student.

Take next the operating expense accounts, many of which have interesting social bearings. Here we may find information with regard to pensions and relief department work, advertising, and insurance; damage to property, to live stock, and to freight; the operations of dining cars, hotels and restaurants, and even stockyards for the handling of animals; many other activities that are only incidental to railway operation, yet must be carried on as a matter of obligation to the public, and must be recorded in your accounts.

The subject of pensions alone is an important topic of social discussion at the present time. Take again the general problem of operating safety. This involves employees, passengers, and the general public as well, for casualties incident to railway operation occur to all classes.

Finally, I would emphasize the social side of railway service—its direct contribution to human welfare. When we say that the railway industry last year spent 800 millions of dollars for new plant and equipment, and distributed nearly 5,000 millions in operating expenditures, we are stating facts in statistical form. When translated into human terms, these same facts mean that the railways were transporting men and women on missions of joy and of sorrow; were hauling goods for the satisfaction of human needs and desires; were catering to the luxurious tastes of the many, by bringing them fresh peas in midwinter from Mexico, lettuce from Florida, and fruits out of season from many other points; were supplying work that supported a million American families; were maintaining sick and aged employees on relief and pension funds; were meeting emergencies such as flood and fire relief and other disasters; were supplying human wants in a thousand ways that would not ordinarily be noticed in railway records.

These are the social by-products of railway accounting—the unromantic records you spread out for the historian and the social student to translate into vivid pictures of the service rendered by the railways to mankind.

H. W. Johnson

T. O. Edwards

W. E. Eppler

E R. Woodson

Economic

But there are other by-products, in addition to those that are historical or social. The most important is the economic value of railway accounting. By "economic" I mean that phase which brings out the relation of the railway industry to other industries, and indicates its place in the economic structure of the nation.

In this phase, the assembled accounts and statistics of railway operation acquire a significance far beyond that which they have when considered alone. For example, you recorded the fact, in 1927, that railway operating revenues aggregated the amazing total of 6,200 millions of dollars. To know this amount is of interest, especially when compared with the corresponding revenues of other years, or when broken down into its parts and sources, such as the freight service, passenger service, and the like. That is its significance from a strictly railway point of view.

But railway revenues acquire a special economic interest when compared with the total income of other fundamental industries like agriculture, the manufacture of iron and steel,

or the production of motor cars and automobiles. Then and then only does the full significance of railway revenue begin to appear.

The same is true of many other accounts maintained by the railway accounting profession. Railway operating expenses, aggregating last year the tidy sum of 4,600 millions of dollars, have many angles of interest for the railway operator, the maintenance engineer, the motive power man, and other groups of railway officials. But this same item takes on new significance when the channels through which the expenditures flow are considered as parts of the great economic currents of the nation.

Do the railways pay out nearly three billions in wages every year? It so, what proportion of the national wage bill does that figure represent? What does it contribute to the general purchasing power of the country?

Do the railways purchase materials and supplies to the extent of a billion and a half dollars annually? If they do, then they must buy a large proportion of the national lumber cut, of the iron and steel output, of the production of coal and fuel oil, and so on through countless products of the nation's industry. These two represent economic contributions to the commercial activity of the United States.

Your records show a wide variety of ways in which railway funds are expended: for capital improvements; for wages and the purchase of materials and supplies; for taxes to support schools and good roads and other civic agencies; for countless other purposes. These billions of dollars poured into the arteries of trade represent a real economic contribution to the nation's welfare, and your accounts are what tell the story.

Again, railway traffic statistics have come to be the best known index of business conditions. Not only are the trends of the past subjected to analysis, but economists and business men analyze the current returns as an indication of present actualities and future possibilities. The problem of business forecasting has appealed to many as a fruitful field of study, and railway accounts and statistics enter largely into their analyses and comparisons, industry with industry and period against period.

So I ask you to give yourselves credit for producing more than the mere dry facts of railway operation. You are spinning a web of life, which is instinct with human interest, with historical value, and with social and economic aspects. These are the "accounts elusive" with which you are perhaps unwittingly working. These are the "by-products" of railway accounting.

President Kemper's Address

The address of President E. H. Kemper on the opening day of the convention follows in abstract:

Effective January 1 of this year, the Interstate Commerce Commission has required an expansion of the freight commodity statistics, to be compiled by the carriers and reported to the Commission quarterly. The classes of commodities (by which the statistics are compiled) have been increased from 70 to 157 with the amount of freight revenue for each class. Subdivisions are made of the tonnage and carload figures. On behalf of the railroads, a committee of traffic and accounting officers made representations to the Commission before its order was issued, to the effect that the additional requirements would involve an expense out of proportion to the possible use of the statistics, and would produce a set of figures that could not, equitably or practically, be used in rate cases until, and unless, supplemented by such detail as to constitute virtually a special study for that particular purpose. A decided limitation on the statistics is that they are by classes, rather than by individual commodities. Obviously, freight commodity statistics, by each commodity could be produced only at a prohibitive and staggering cost. Freight commodity statistics can be properly and effectively used by the officers of an individual road who are familiar with the conditions incident to a particular class of traffic on their own line, which may be quite different from similar traffic on other lines; but such statistics for carriers generally must inevitably be subjected to inaccuracies, erroneous conclusions, and misuse unless their application, their limitations, and the practical conditions surrounding them are thoroughly understood. The revenue figure required by the Commission is gross revenue, which means the freight revenue without taking into consideration corrections, adjustments, etc., and while this was adopted by the Commission as the means of meeting the systems in general use, and, therefore, was a measure of economy, the freight revenue thus produced will not, ordinarily, be the actual revenue. Confusion and misunderstanding must surely arise especially on the part of those people who believe that anything expressed in figures must necessarily represent a fact. It is to be devoutly hoped and confidently expected that the Interstate Commerce Commission will find, as the result of its experience, that the requirements in this connection may be modified so as to save some substantial part of the hundreds of thousands of dollars of expense involved to the carriers in compiling the freight commodity statistics.

Overcharges and Undercharges

A subject that I have been very much interested in during this past year has been along the lines of prevention of overcharges and undercharges. Overcharges and undercharges are annoying to our patrons, and often cause embarrassment to the railroads. If we could have ideal conditions and if our employees could, at all times, do perfect work, there would be no overcharges or undercharges, but as long as railroad conditions continue to be what they are, we may reasonably anticipate that overcharges and undercharges will continue with us. Our Overcharge Committee, with the cooperation of our Freight Committee, has rendered a distinct service by its recommendation for focusing attention on the prevention of overcharges and undercharges. We are now at the point where the interest of the railroads can and should be aroused on this subject, and campaigns undertaken by the individual railroads in whatever way will seem to them best, and be most particularly adapted to their conditions. The subject lends itself to educational effort. I cannot emphasize too strongly that there is a necessity for undertaking cooperative effort in the prevention of undercharges and overcharges, and the advantages that will follow efforts in this direction will make for better service by the railroads and for satisfied patrons. With an apology for personal reference, I would say that on the lines I represent this subject has been put before our traffic department most vigorously, soliciting their aid in simplification of tariffs, prompt issuance of division bases, and more intensive instructions to agencies on the proper application of tariffs.

Wage Statistics

The wage statistics reported by the carriers monthly to the Interstate Commerce Commission probably cost millions of dollars annually for their compilation. As accounting officers, we are interested in effecting any possible economy on those statistics. The Bureau of Statistics of the Interstate Commerce Commission has placed before our Committee on General Accounts a suggestion for curtailing the statistics in that the complete data would be required only for the individual months of January, April, July and October, the information to be furnished twelve times a year being only the number of men and the total compensation for each reporting division. Presumably, the compilation of the complete data under this suggestion would be spread over a period of three months for each month compiled. In other words, the complete report for January would be made available three months after January, and so on. That would be necessary to effect economy and to provide continuity of service for the employes engaged in compiling such statistics. The Bureau of Statistics, however, points out that the saving under this suggestion could not be effected if the managements of the carriers would require, for their own use, the compilation of the same detail for the twelve months as heretofore. Under the suggestion advanced by the Bureau of Statistics, the determining factor seems to be whether the railroad managements could and would forego the monthly compilation of wage statistics, as heretofore, for their own use. The compilation of these statistics monthly is expensive to the carriers and in my opinion relief should be afforded.

Valuation

During the next three years, the Interstate Commerce Commission and the carriers will probably spend something like thirty millions of dollars on the valuation of railroad properties. From 1913 to June 30, 1927, the government has spent about thirty million dollars in this connection, while from 1914 to December 31, 1926, the Class I railways have expended about one hundred million dollars.

It is difficult to see the wisdom of an expenditure over the next three years by the Commission and carriers combined of anything like thirty millions of dollars. Instead of awaiting the principles of valuation being more firmly established by the courts, the Commission apparently is proceeding upon a basis of accumulating a vast array of detail which will permit it to bring forward its valuations by any of several contemplated methods.

At the request of the Director of Valuation, a joint

committee composed of engineers and accounting representatives, to cooperate with the Bureau of Valuation in formulating plans under which the work of correcting the engineering, land and accounting reports to a later date (tentatively December 31, 1927) is presenting proposed plans that will materially increase the burdens of the carriers.

The Interstate Commerce Commission, for some time, has had under consideration the revision of the accounting classifications prescribed by it for steam railroads. The Commission has wisely and prudently refrained from putting into effect any revised classifications until it has considered all the angles of this far-reaching subject. Our committees have cooperated, in every possible way, with the Commission's representatives in connection with the proposed revision. The Railway Accounting Officers Association and its committees will be ready, able and willing to render any further cooperation or assistance that the Commission or its representatives may desire.

Duplication of Reports to Government

In considering the revision of the accounting requirements for railroads, some attention should be given to the peculiar situation brought about by the requirement of keeping our records to produce one result, to be certified as a true and correct statement of net income under the regulations of the Interstate Commerce Commission, and, for the same period, produce a different statement of the true and correct net income, in order to meet the requirements of the income tax law. A similar situation exists in that the Bureau of Valuation of the Interstate Commerce Commission has accounting requirements for the railroads that differ from similar requirements issued by the Commission or its Bureau of Accounts.

Accounting for Additions and Betterments

We would be putting on seven-league boots and striding a long way towards simplicity, economy and efficiency in railway accounting if the railroads were permitted to discontinue the present methods of accounting for road and equipment, and adopt addition and betterment accounting. That means, in effect, discontinuing the present primary accounts, in the road and equipment classification and having just three accounts: Road, Equipment, Investment Suspense—although those might be subdivided into classes of projects, etc. This suggestion would provide adequate information and all needed data for the Interstate Commerce Commission, the carriers, and the public. Viewed from a managerial standpoint, there is nothing valuable, useful or helpful in dividing and parting the total investment in road or equipment, or the current charges thereto, into 62 primary accounts. It is the general practice of the railroads to fix budgets covering new construction or additions and betterments, and the ultimate charge of these expenditures to primary accounts has no effect in determining the question of paying for extensions or improvements, or in determining whether existing facilities require extension or improvement.

A suggestion for abolishing the present primary accounts in the Road and Equipment classification might seem to some, at first glance, revolutionary; but if we must have primary accounts in the Road and Equipment classification, then let us have them according to classes of projects, which would be more useful and helpful to the Commission, the carriers and the public than the present primary accounts by component parts.

In operating expenses an analysis or comparison month by month or year by year usually is very valuable and useful. Primary accounts in operating expenses facilitate comparisons of that nature and, therefore, aid the managerial control of future operations, in order to effect economies and avoid unnecessary expenses. No such conditions prevail with regard to the Road and Equipment primary accounts. The investment expenditures would usually vary widely, would be totally different from year to year and even the character of the road or equipment for which the expenditure is made will probably change from year to year, preventing any comparison or analysis of the investment account through the primary accounts. Capital or investment accounting among the railroads has already become absolutely project or job accounting, in other words, addition and betterment accounting, inasmuch as an authority for expenditure must be issued for each project, the charges must be recorded in such a way that the total cost may be ascertained and a completion report must be prepared and filed, definitely establishing the ledger value of the project during its life and serving as a proper basis for accounting upon its retirement.

In view of all these conditions, no good purpose will be served by perpetuating the present primary accounts in the Road and Equipment Classification.

Depreciation

In considering the revision of the accounting classifications for railroads proposed by the Commission's representatives at that time (those classifications now being in effect), the Railway Accounting Officers Association, in 1914, adopted a resolution stating, "It is the sense of this Association that depreciation is not a matter of accounting and, therefore, the Association has no recommendations to make as to what provisions therefor should be made in the classifications." The subject of depreciation has again arisen through the issuance, by the Interstate Commerce Commission of its order in Docket No. 15100. That order has been suspended by the Commission and is now being made the subject of public hearings. Those hearings should, and undoubtedly will, develop the impracticable and drastic provisions of the order and the serious effects of such an order on railroading. I have touched but briefly on depreciation because it is a subject that is being handled, for the railroads, by the Presidents' Conference Committee.

Cost Accounting

Many theories have been advanced in recent years in regard to cost accounting or cost finding for railroads. It is an old subject, but every little while someone takes this antique off of the shelf, dusts it off, dresses it a little, makes some change here and there—then advances it as something new and novel. Let's get out the old album and turn back the leaves of time for a fleeting glance at a few, a very few, of the old-timers.

[Mr. Kemper then cited from history a number of early attempts at cost accounting on the American railways.]

Those who advocate cost accounting for railroads will do well first to read what the old-timers of the past hundred years have written on this subject.

Cost accounting, as used in industry, is often advanced as the reason why railroads should follow similar methods; and while the argument is plausible, its plausibility is more apparent than real. The application of cost accounting, industrially, undoubtedly serves a useful purpose, but in industry the system must be made adjustable to the varying needs and cannot be rigid or inflexible. Theoretical consistency is often sacrificed. Where raw material contributes largely to the cost of the finished article the cost accounting system must stress that element in its proper importance. In one line of manufacture, the item of labor may take its place as the most predominating and important factor in production costs, in another it may be fuel or power, in still another it may be chemical analysis, physical characteristics, etc. A large steel company does not prescribe the same detailed cost procedure for a blast furnace making pig iron as for a structural fabricating shop, for a coal mine as for a zinc smelter, for a rail mill as for a foundry. The National Lumber Manufacturers Association has stated that "Because of the widely diversified methods of logging and manufacturing, it is practically impossible to adopt a uniform cost accounting system that would be applicable for the various lumber producing regions as a whole," and the Associated Cooperage Industries have said, "The matter of working out a standard system presents unusual difficulties because of the dissimilarity of the operations in the different branches of the industry."

Expenses which it is not possible to directly allocate to any specific unit of production constitute one of the most serious elements to deal with effectively in systems of cost accounting. These indirect items of expense complicate very materially every effort to secure. dependable unit cost results when they are present to a degree where they make up a major part of the cost.

If cost accounting means what I think it means the railroads have had it in a sensible, practical, efficient way for many, many years. It may be unfortunate that we have not called it cost accounting; we have referred to it as accounting, special studies, etc., but the term used does not alter what it really is.

Is Public Willing to Pay for Cost Accounting?

The railroads should, at all times, give the public what it wants and what it pays for, but that had heretofore been construed as transportation service. If the patrons of the railroads desire that railroads do cost accounting in the same way that it is done in industry, are our patrons willing to pay more than a hundred million dollars annually for that kind of "service"?

The attitude of the railway accounting profession towards cost accounting consists of no fear of it and of no desire to shy from it. We face the problem frankly and welcome its discussion and consideration.

Railway accounting needs simplification—rather than more

complicated or involved methods. The demand is for contraction—rather than expansion in accounting requirements. Railway accounting cries aloud for less burdens—rather than more. Should it be expected of railway accounting that it can have added to it unlimited accessories, attachments and knick-knacks? No one ever criticizes the cow for not giving maple syrup, beeswax and gasoline.

Unwieldy and overintricate accounting is suicidal, in that it destroys itself and may even be murderous by sweeping on to destruction fundamental and controlling principles. Bulk or volume may be impressive in measuring productivity in accounting, in the same way that it might be impressive for some one to undertake to count the grains of sand on the shore of a boundless sea; but we would linger long enough to ask: What's the use? Usefulness is the proper yardstick to apply to accounting. In order to be useful, accounting must reflect the results simply and directly—and must not be merely complex and burdensome. The cold, hard fact must be faced that employes of average intelligence are primarily to be depended upon to carry any accounting system into practical effect. The underlying records must be prepared by average employes if any degree of economy is to be maintained in accounting. Furthermore, if the requirements are too involved and if accounting is oversystematized, the results will probably be jumbles of figures, of doubtful value and use.

Commissioner Eastman's Letter

The letter from Interstate Commerce Commissioner Eastman to President Kemper follows in part:

It is a matter of regret to me that I cannot accept your very kind invitation to attend the Fortieth Annual Meeting of the Railway Accounting Officers Association. The pressure of our work here in Washington compels me regretfully to decline your invitation.

Your request for such comments and suggestions as might occur to me as of interest at this time inevitably brings up the subject of depreciation and the revision of the accounting regulations.

As you know since our last annual meeting Docket No. 15,100, Depreciation Charges of Steam Roads, has been reopened for rehearing, and revision of the accounting classifications has been made the subject of public hearings under Ex Parte 91. The great importance of these closely related subjects and the desire of the Commission to afford all interested parties an opportunity to present their views have already resulted in the presentation of considerable testimony and will require further hearings to develop all the facts necessary for the Commission's information.

In view of the time already spent on these matters may I urge upon your association and its members in so far as their participation in the hearings of these questions is concerned, the importance of prompt responsive action in submitting testimony or preparing exhibits required in the course of the hearings.

The Commission is highly appreciative of the cooperation which has always characterized your association in its relations with the Commission and its various bureaus and trusts that in its consideration of the important subjects of depreciation and the revision of the accounting regulations it will benefit by helpful constructive criticism on the part of the association, its committees and membership generally.

Completion of the revision of the accounting regulations necessarily waits upon the Commission's conclusions with respect to depreciation. It has been deemed advisable, therefore, that the effective date of the revised classifications shall correspond with that to be fixed for the depreciation order.

The Commission in its work to a very great extent relies upon the returns made by carriers in their annual reports.

It has recently come to our notice that under different plans of carrier organization all chief accounting officers have not that complete control of accounting matters which they should necessarily exercise in order to be responsible to the Commission for the accounting by their respective companies.

In order therefore that the Commission might have a record of the authority under which the chief accounting officers of the different railways are performing their work, a circular was recently issued by the Commission requesting, among other matters, a copy of the rules under which the control of the accounts of carriers was exercised by the chief accounting officers and for certain particulars with respect to the verification by them of the accounts kept in other departments.

So far these returns indicate that ample power and authority have been delegated chief accounting officers to secure the maintenance of correct and reliable records and to invest them with full responsibility for the accounts of their companies. Where the returns indicate that a different situation exists, it is the Commission's expectation that the necessary change will be made.

Committee on General Accounts

The report of the committee on general accounts, when presented to the convention proper, was adopted without discussion and without a dissenting vote. In the pre-convention meeting of this committee, however, matters arose which brought forth lively controversy. The most outstanding of these was a presentation, by W. J. Farrell, secretary of Division VI, Purchases and Stores, of the American Railway Association, of a proposed report for presentation at the forthcoming June meeting of Division VI.

A committee of the Purchases and Stores Division had prepared this report in tentative form. Its subject matter was a lack of uniformity among the railroads in accounting for material and supplies. The comments of this committee were based on returns from a questionnaire sent out some time ago by the division, which returns indicated erroneous accounting practices on the part of 12 per cent of the carriers (from a standpoint of mileage) which answered the questionnaire. The proposed report of the Purchases and Stores committee consisted largely of vigorous criticisms of the accounting practices of such carriers in making credits to general balance sheet account 716, "Materials and Supplies." The tentative report of the committee was submitted to the accounting officers for constructive criticism. Discussion developed that six roads made up the 12 per cent supposedly in error. It further appeared that information given to Division VI leading to classifying these roads as in error in their accounting practices was incorrect, or based on some misunderstanding of the questions propounded.

The discrepancy was said to be due to the fact that the Purchases and Stores committee had secured its information from stores department officers rather than from accounting officers. Mr. Farrell was questioned as to the purposes behind this report and he replied that it was to place comparisons between specific carriers on a more equable basis. The value of inter-carrier comparisons was questioned, it being held that the only fair comparison was from year to year on the same carrier. This was admitted, but it was stated that, whether meaningful or not, inter-carrier comparisons are made and, that being true, it is an advantage to have the data prepared in a uniform manner.

Testimony which has been given before the Interstate Commerce Commission, purporting to express the views of Division VI, calling for the breaking down of the material account in the balance sheet is repudiated by the division.

The Committee on General Accounts voted to continue this subject on its docket and a special committee was named to handle it with the committee from the Purchases and Stores Division. This R. A. O. A. special committee consists of H. W. Johnson, comptroller, C. B. & Q., J. F. Baxter, general auditor, A. T. & S. F., and L. A. Robinson, comptroller, C. & N. W.

F. H. Millard, assistant to president and comptroller of the St. Louis South Western, protested against the

practice of the Bureau of Valuation of the Interstate Commerce Commission in requiring statements from the carriers duplicating statements already given to the Bureau of Accounts. A suggestion was made that closer harmony between the two bureaus was needed, as was similar co-operation between those departments on the railroads.

The committee expressed its thanks to Director Lorenz of the Bureau of Statistics of the Interstate Commerce Commission for a suggestion relative to handling reports of the new quarterly commodity statistics to the various state commissions during the current year.

The committee continued on its docket for later report the suggestion of Dr. Lorenz that complete wage statistics be taken during but four months of the year. This question was commented on by President Kemper in his address.

Committee on Freight Accounts

The report of the committee on freight accounts was adopted as it appeared in the Agenda. One of the outstanding features of this report was the emphasis it laid on overcharges. In presenting the report, formal discussion was led by A. J. Moran, auditor freight accounts, Erie, and W. H. Malcolm, auditor freight accounts, Mo. P. Mr. Moran's remarks, in abstract, follow:

About a year ago we adopted a plan of zone waybill revision, which provides for having the work done at points on the line, periodical test checks being made in the general office. In briefly outlining this plan no claim is made that the scheme is an original one; in fact, the plan was previously in effect on one of the Class I carriers. After a comprehensive study the fundamental principles were followed with the exception of making slight changes to meet our local conditions.

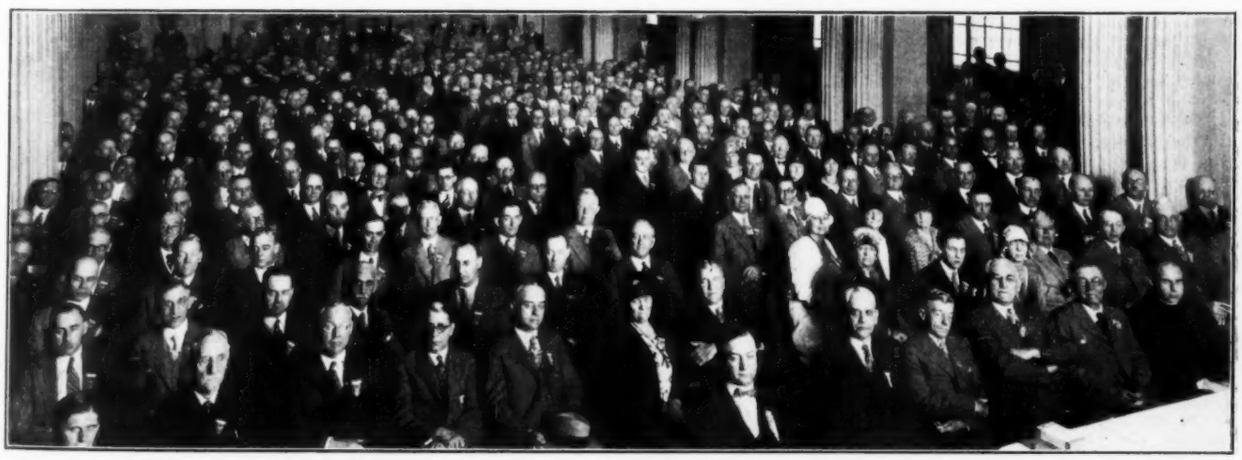
The first proposition was to have the tariff files at the larger stations completely checked and the necessary tariffs furnished so as to insure outbound waybills being correctly prepared as well as providing the tariffs to properly revise all inbound waybills before freight bills were made. Zone waybill revision bureaus were gradually established at selected locations as near to the center of the territory covered as was possible. To each bureau were assigned from 30 to 50 stations and in accordance with the average number of waybills received at all the stations assigned to a particular bureau the number of rate clerks required were authorized. The general average was practically on a basis of providing a rate clerk for each 300 waybills handled daily. The forces were recruited from the general office, where a number of rate positions were abolished, from stations and former waybill revision bureaus, which were located at junction points under the jurisdiction of this department. To cover the entire system ten of these bureaus were established, each bureau being in charge of a chief clerk reporting to the auditor of freight accounts and all such employees being carried on accounting department payrolls.

Our station accounting is on a daily basis. At the larger stations, where revising clerks are employed, the waybills are revised and freight bills prepared on corrected figures and are so included on reports to the general office. At some of the smaller stations we attempt to educate agents to maintain an index of rates applicable on traffic received regularly. Therefore, it will be noted that an attempt is made to revise all waybills before the freight bills are presented to patrons. The receiving station is held responsible for any errors in extension.

At the close of each day waybills are entered on freight received report to which is attached the original waybills. The report, with waybills, is sent to the designated zone waybill revision bureau where complete waybill revision is accomplished. In no case are reports held at the bureau beyond the day on which they are received. Where errors are discovered a waybill correction is issued at the bureau to the station, the waybill and report corrected and where the case warrants the information is telephoned to the destination station. After the work at the bureau is completed the reports with waybills are mailed to the general office.

A small force of rate clerks is maintained in the general office for test checking the work of the bureaus and the larger stations where revision clerks are located. These test checks are made consistently and cover about two days actual work at each point each month. Where we are satisfied that the revision at the larger stations is efficiently done such reports are sent direct from the station to the general office, and are not again revised, except periodical test checks as previously explained. The results we have accomplished so far are very satisfactory and the schedules maintained for the forwarding of reports from stations to the bureaus have resulted in practically all freight bills being corrected before payment.

There were many difficulties that we encountered in connection with the plan, particularly the problem of locating space for the housing of these bureaus at advantageous points, the difficulty in building up tariff files, etc. However, these are details which can be worked out by the freight auditor, who must receive the proper support from the heads of the operating and traffic departments.



The Delegates at the Opening Session at the Atlanta Biltmore

Mr. Malcom's remarks follow in part:

Unquestionably, the task with which the traffic people have been confronted during the past eight years has been a tremendous one. Country wide rate advances and decreases during the following period of federal control completely changed the rate structures of the country and destroyed practically all existing divisional relationships. A tremendous task was thus thrown upon the forces charged with the construction of divisional agreements, and this has been, and is being made more difficult through the rapid extension of through rates—usually under I. C. C. orders—the extension of transit privileges of all kinds, and various other causes.

My thought is that it should be practicable to do three things:

1. Formulate intra-territorially, and as far as possible inter-territorially, one or more general bases for use in connection with rates for routes for which agreed divisions have not been furnished.

2. Provide machinery for arbitration, in order that divisional agreements may be expedited.
3. Endeavor by organized effort to bring about simplification of existing bases where such bases require the use of expensive methods, such as specifics or percentages by classes.

No one, of course, would advocate simplification of divisions at the expense of revenue, but the fact remains that for the traffic handled under joint through rates the carriers are entitled to collect no more the through freight charges represented by such rates. It, therefore, follows that every dollar unnecessarily expended to accomplish the division of a given amount of revenue is finally reflected in the amount entered against those all important words "Net Income" at the bottom of the income account.

In his address to the convention in 1922, J. J. Ekin, then president of the association, after giving some surprising figures with respect to the percentage of corrections on junction transfers at one important junction, suggested that:

A plan of arbitration be put into effect for settling disputes relating to divisions of joint through rates similar to that now in effect for settling disputes between carriers relating to apportionment of loss and damage and overcharge claims.

Since that time the situation at junction points has greatlv improved—due principally to the extension of through billing during the past three years—but disputes in great number and variety still exist.

No better plan having been found, what reason can there be for not giving the arbitration method a trial? We have throughout the country tariff bureaus, publishing agents and traffic committees of all kinds, with qualified personnel drawn from railroad sources but divorced from direct connection with any particular road.

It would seem to me that a small committee of this character in each rate territory, clothed with authority to settle divisional disputes, and possibly with authority to approve recommendations for simplification intra-territorially, would solve the division question intra-territorially, and that by cooperation with each other, many of our inter-territorial problems could be disposed of.

In my opinion, there should be organized cooperation between those whose duty it is to furnish the division bases and those whose duty it is to apply them. I have in mind the old so-called "Midgely" percentage book, now known as W. T. L. 15. For thirty years or more this issue carried a line of two-figure percentages applying between Chicago, Peoria, St. Louis, etc., on the one hand and territory on and west of the Missouri river on the other hand.

Some two years ago, following a division case before the Interstate Commerce Commission, an agreement or compromise was reached by the carriers under which the proportion accruing to lines east of the Missouri river was to be increased fourteen per cent. This was supplemented by an agreement to the effect that the usual rule for disposition of fractions would be followed when revising the percentages. The usual rule for disposing of fractions carries to the third point, and instead of two-figure per cents, which answered all purposes for thirty years or more, we now have three-figure per cents, and probably will have for years to come.

Committee on Overcharge Rules

In presenting the report of the committee on R. A. O. A. Overcharge and Agency relief Claim Rules, Chairman Fox (auditor freight overcharge claims, C. & N. W.) said in part:

By way of explanation I will speak of subject 39 [Overcharge Rule pamphlet]. In a preparation of these, of course, after being adopted and printed in our records they become recommendatory only, and with the thought in mind that the people who are preparing arbitration and appeal cases will follows the standard formulated, with this in mind that after one man presents his arbitration case and he states the facts and goes on and relates the different subjects, that the next man preparing his arbitration case can simply mention that he subscribes to the findng in a prior case.

[Mr. Fox referred to determining the weights on coal and explained that the position of the accounting officers was being governed by instructions of their traffic officers.]

One other subject number 13—interline settlement of claims and distribution statements: The position of the committee was this, that the rule in its present condition provides that to send a notice would prevent the running of the statute of limitations. We had before us in our records a decision by the arbitrators in case 444. We had a somewhat similar replying decision from the appeal arbitrators in another case, and subsequent to this time and after our last meeting in Detroit Mr. Hoover of the Southern Railway applied to the appeal committee for an interpretation of this rule and the appeal committee, they being the supreme law governing the committee's rules, decided that the rule as at present constructed did not provide for the sending of the notice and thereby stopped the statute of limitations. Necessarily this rule will be carried over and come before the committee next year.

On the subject of overcharges and undercharges, R. T. Sinclair (auditor overcharge claims, A. C. L.) said in part:

Overcharges and undercharges are more annoying to the public than loss and damage, and yet our loss and damage department have for several years carried on a campaign of prevention which has been wonderfully successful. They have even gone us one better. They have a regular force, I believe, of three men who devote their entire time to it. The prevention of loss and damage is altogether a matter of education, of propaganda.

The two principal things that the committee recommended were fixing individual responsibility for every claim and a campaign of education, that is a campaign to educate rate clerks and billing clerks. Every time we pay a claim we make an abstract of it. We make a voucher form in triplicate, and as we make up our request on the voucher clerk, we make a copy which gives billing reference, the charges as collected and as they should have been collected; and the relief authority from the road we are protecting and the agency or line responsible.

At the end of the month these abstracts of cases are assembled and run out in station order and attached to a statement that goes out from our office each month, showing the number of claims charged to the different stations, with a copy of those abstracts to cover each of those claims. These statements go to every agent on the system, to the district superintendents and to the general superintendent. In that way the agent has an opportunity to overcome an error in the future on a similar movement. We find a great many times that errors are due to agent's failure to have proper tariffs. In such cases the agent writes us and explains that he could not have prevented that particular claim on account of lack of tariff. We immediately take that up with the traffic department. Every month we receive hundreds of letters from our agents explaining why they made errors giving rise to these claims. There has been a great decrease in the number of claims as compared with the number of shipments we have handled.

Moreover we conduct on our line what we call rate classes; they are under the direction of the principal agents; they call these classes together at central points two or three or four times a year, depending on business and local conditions.

Our traffic people always have present an expert rate man and questions that have been troubling the agents in that particular territory as to the rates are brought up and discussed. If it is impossible to find the answer at the meeting, the matter is whipped in shape and sent to the traffic department for an answer, which is sent out to that rate class.

We have found these methods useful; in telling you about our plan, we are not asking you to adopt our system. We only hope that every road in the United States will undertake to carry out the committee's recommendations, which are: To work out some plan of fixing individual responsibility for every claim you pay and bring the error to the attention of the party responsible for it; and, second, to undertake in some way to train your rate clerks and your billing clerks to bring to their attention many things that they are now overlooking.

Other Business

Other reports were adopted by the convention without extended discussion or important change.

An amendment to the constitution was adopted calling for the formation of a separate committee of the association to concern itself particularly with the accounting problems peculiar to Class II carriers.

Officers elected were as follows: President, H. W. Johnson, comptroller, C. B. & Q.; first vice-president, T. O. Edwards, general auditor, S. P.; second vice-president, W. E. Eppler, comptroller, D. & H.; secretary, E. R. Woodson (re-elected); members of executive committee (two-year term), J. J. Ekin, comptroller, B. & O., H. S. Palmer, comptroller, N. Y., N. H. & H., and W. C. Wishart, comptroller, N. Y. C.

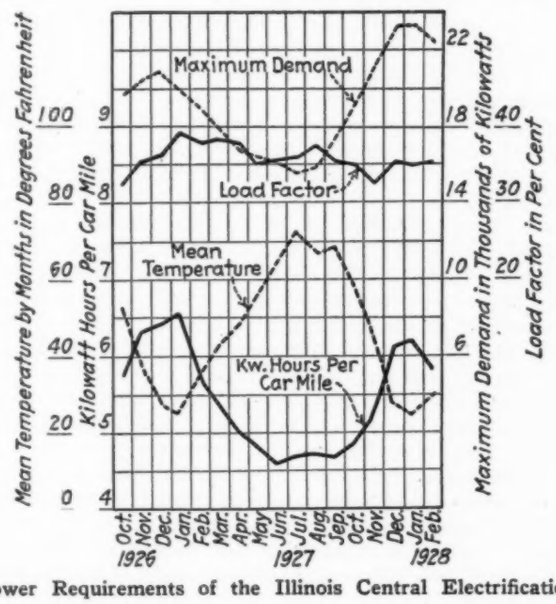
Power for Electric Traction

Representatives of railroads, public utilities, telephone companies and electrical manufacturers discuss power question

AT a regional meeting of the American Institute of Electrical Engineers, on Thursday, May 10, various aspects of the power question were discussed by representatives of railroads, public utilities, manufacturers of power equipment and a telephone company. The chairman of the meeting was Sidney Withington, electrical engineer of the New York, New Haven & Hartford. The first two papers presented were "Interconnection of Power and Railway Traction Systems, by Means of Frequency Changers," by Ludwik Encke, assistant engineer, New York, New Haven & Hartford and "Application of Large Frequency Converters to Power Systems" by E. J. Burnham, central station engineering department, General Electric Company.

Both of these papers dealt with various means of interconnecting two power systems, particular attention being given to adjustable ratio frequency changers. Machines of this type are used by the New Haven to connect its power system with those of the United Electric Light & Power Company and the Connecticut Light & Power Company. The machines permit a transfer of power in either direction without regard to minor differences in frequency and can be built of such a size as to provide only for the desirable interchange of power; they do not need to be large enough to tie the two power systems together.

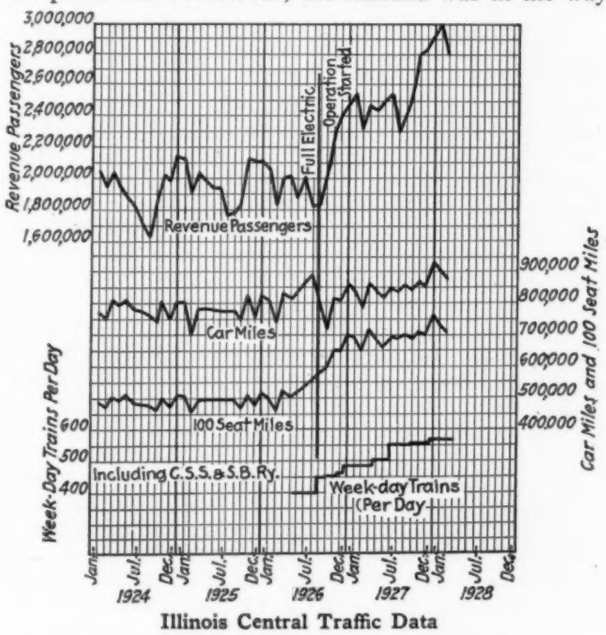
Of particular interest to railroad men was a paper on the "Electrification on the Illinois Central Railroad" by R. F. Shuchardt, electrical Engineer, Commonwealth Edison Company, Chicago, Ill., and W. M. Vandersluis, electrical engineer, Illinois Central. A part of the information in this paper has been published in previous issues of the *Railway Age* and the following paragraphs include an abstract which concerns chiefly power supply. The curves shown, brought up to September, 1927, were published in the December 17, 1927, issue of the *Railway Age*. Significant changes have occurred since that time.



Power Requirements of the Illinois Central Electrification

Illinois Central Power Supply

The location of the Illinois Central tracks along the lake shore is not due to the railroad's wishes. It had no choice in the matter. When the city had grown large enough and wealthy enough to want the lake front for parks and boulevards, the railroad was in the way of these improvements, and it was necessary for some kind of an agreement to be reached between the city and the railroad, involving the surrender of the company's riparian rights and an adjustment of other property in such a way that both the city and the railroad would benefit. For some years there was considerable agitation, also, in favor of the electrification of Illinois Central trains in order to eliminate the smoke which it was claimed detracted from the beauties of the lake front.



Illinois Central Traffic Data

An agreement was eventually reached between the city and the railroad by which all the desires of the city with regard to the improvements, particularly electrification, would be realized by stages, and by which the railroad, in turn, would receive certain benefits such as the acquisition of certain property rights and relief from the expense of protecting the lake front against erosion. This agreement is embodied in the so-called "Lake Front Ordinance."

Because of the diversity of ownership and of administrative powers of the various interests involved, it was necessary to make the agreement include the South Park Commissioners and also the Michigan Central Railroad. In addition, permission of the Secretary of War had to be obtained for certain of the lake front changes.

Under the ordinance the railroad was obligated to electrify its complete suburban service by February 21,

1927. The electrification of the freight service north of Roosevelt Road must be completed by 1930, and south of Roosevelt Road by 1935. The electrification of the through passenger service must be accomplished by 1940, provided agreement is reached between the Illinois Central and its tenant railroads with respect to electrification.

The Illinois Central placed its suburban service in complete electric operation in July 1926, a full six months before the limit specified by the Lake Front Ordinance. In addition to the electrification, the railroad made many improvements, a large number of which were not required by the ordinance. These included extensive track changes, grade separations, yard construction and other works.

The suburban service to be electrified was the most important means of rapid transportation serving the densely populated Hyde Park, Woodlawn, and South Shore districts, as well as the more outlying districts and suburbs directly south of the city. Because of its fast and frequent trains, it was considered the best transportation in the city, notwithstanding the fact that its coaches were old, small, and of wooden construction, and its locomotives equally small and old.

The suburban system comprises 37.8 route miles, including 30 mi. on the main line and 8.8 mi. on two branches. There were three classes of trains; namely, local, express, and special. As many as six parallel tracks were necessary in the heavy traffic districts. In the year 1922, when definite plans for the electrification were begun, 21,500,000 revenue passengers were carried by these steam trains.

Studies of Power Supply

Among the major studies that occupied the railroad's engineers was naturally that of the most satisfactory power supply, all things considered. Extensive and careful estimates were made to determine what the power costs would be if the railroad owned and operated its entire power system. These estimates were then compared with the proposals of the power company. In the decision, of course, these cost figures were fully considered, but the operating advantages of obtaining energy from a large centralized power system, and of having the power company perform the operations to provide the energy in the form needed for transportation service also carried weight. As a result of these studies, which were carried on over many months, the railroad concluded to purchase all of its electric energy from the power company.

Fundamentals of Power Contract

The contract which was entered into in 1924, and under which operations commenced in May 1926, calls for the delivery of energy from the substations of the power company. This is at 1500 volts, direct current, on the feeders of the railroad company for traction and 2300 volts, alternating current, for signaling. Three-phase energy at 4000 volts is also provided for the railroad's light and power requirements in its stations and shops. The present supply is taken from seven substations, five of which are within the city and two beyond the city limits. From the two outside substations the power company supplies the energy by arrangement with the Public Service Company of Northern Illinois, which owns and operates these substations. This latter company, however, does not appear in the contract with the railroad company. The conversion equipment consists of synchronous converters and mercury arc rectifiers, which are described more fully below.

The charges for electricity follow the proved Hopkinson method with a "primary" in recognition of the power company's investment and a step rate "secondary" to cover the operating and service costs. In order that variations in coal cost may be taken into account, there is provision for a change in the secondary charges if the cost and heat content of the coal used falls outside of certain limits.

The primary charge is based on the maximum amount of electricity drawn under normal operating conditions. In order that the railroad company may have the advantage of the power company's large reservoir of power and without the payment of the regular primary charge for additions required in emergencies only, abnormal demands due to such emergencies are excluded in determining the maximum demand for billing. The recognized emergencies are

1. Abnormally heavy traffic resulting from failure of other transportation lines, unless continuing for more than ten consecutive days;
2. Traffic arising from extraordinary assemblages, such as fairs, race meets, ball games, conventions, and the like, unless continuing for more than ten consecutive days;
3. Congestion of traffic arising from a railroad accident, derangement of power supply, or other emergency conditions;
4. Other excessive traffic beyond that usually carried and caused by some unusual circumstance or condition;
5. Hours during which the temperature is + 5 deg. fahr. or lower. (The suburban cars are all electrically heated.)

The limit to the amount of electricity which may be drawn under these emergencies is the capacity of the power company's equipment which may be usable for the railroad company's service during such emergencies. This is one of the features of the contract which makes the central station service of so much greater advantage to the railroad than would be that from its own separate plant. To insure a reasonable, continuing return on the investment made by the power company the railroad guarantees that the maximum demand that it will pay for in any month will not be less than 70 per cent of the highest demand established during the last preceding 12 months. A minimum monthly load factor of 30 per cent is also guaranteed.

One of the railroad's requirements which was finally accepted by the power company but with some misgivings, relates to regulation of the feeder pressure. The high-speed suburban service with short intervals between trains requires a close adherence to running schedule and this, in turn, was felt to demand close voltage regulation. The permitted variation is from 1400 to 1550 volts on the feeders at the point of delivery at the railroad's right-of-way, which is practically at the substation feeder bus.

Provision is included for additional capacity in new or existing substations, as the increase in load requires. Of course, the power company may install additional equipment in its substations for uses other than this electrified railroad, and also use its equipment to serve other electrifications later if found advantageous to do so.

Substations and Their Equipment

The energy supply for the initial electrification is obtained through seven substations located adjacent to, or very near, the railroad right-of-way. Five of these are within the city and are fed from the generating stations at 12,000 volts, 60 cycles over the power company's cable system. The two substations in the sub-

urban region are fed from the 33,000-volt, 60-cycle overhead transmission system of the Public Service Company of Northern Illinois. The line arrangement throughout is such as to provide reasonable reserve so as to insure a high order of reliability.

The 1500 volts direct current for the traction service is derived in part through 3000-kw. synchronous converter units and, in part, through mercury arc rectifiers.

The major equipment installed in these substations is given in the table.

Table I—Major Substation Equipment

Substation	Synchronous converters		Rectifiers		Total kw. capacity	1500-volt feeders		Light and power transformer capacity
	No.	Rated kw. capacity	No.	Rated kw. capacity		Pos.	Neg.	
E. 16th St.	3	3,000	0		9,000	7	6	1,500
Brookedale	2	3,000	1	3,000	9,000	10	9	1,500
Cheltenham	2	3,000	0		6,000	4	2	150
Front	2	3,000	0		6,000	7	6	300
Laflin	0		1	1,500	1,500	2	1	75
Harvey	1	3,000	1	2,000	6,000	4	1	300
Vollmer Rd.	1	3,000	1	1,500	4,500	4	1	300
Totals	11	33,000	4	9,000	42,000	38	26	4,125

Operating Experience

This electrification has now been in operation for 21 months. From every point of view the equipment has met all expectations, and the complete operation has apparently been successful. The first electric time table was put into effect on August 28, 1926, with a total of 396 revenue trains. Today, 497 trains are being operated on a normal week day. There are 72 additional electric trains run by the Chicago South Shore and South Bend Railroad, which uses the Illinois Central electrified tracks between 116th Street and Randolph Street, making a total of 569 electric trains on every week day. The public has shown its appreciation of the electrification by the increased traffic, even though the fares were raised 20 per cent a few months before electrification started.

The increase in revenue passengers from January, 1924, to February, 1928 is shown in one of the illustrations and the effect of the electrification is plainly seen. On this graph are also shown the car miles, the seat miles, and the number of daily trains. It may be noted that the car miles did not increase very much after electrification, this being due to the fact that the seating capacity of the new electric car is one-third greater than the average old steam suburban car and the standing capacity is increased still more.

The operation has not been entirely free from troubles but that cannot be expected from an installation of the magnitude of this electrification. However, they have not been of a major character and with one or two exceptions, have not interfered with the transportation service.

The operation of this service depends on an adequate and reliable supply of energy. While the electric service agreement between the power company and the railroad calls for a practically continuous supply of energy, both companies must at all times cooperate very fully in order to maintain efficient service, on account of the electric switching operations involved and because of common maintenance troubles inevitably arising. Such cooperation has been complete in every way, and all routine and emergency arrangements for continuity of service have been handled with efficiency and satisfaction. The second group of curves show the magnitudes and variations of maximum power demand of this suburban service, the load factor, and the kw-hr. per car mile, all measured at the d-c. bus in the substations. The relation of these values to mean monthly temperature can be observed. The fact that the cars are heated entirely by electricity makes the temperature an important influence.

Because of the heavy load fluctuations imposed on the substation converting equipment and of the close regulation specified by the railroad there was doubt in some quarters that synchronous converters would give satisfactory service and motor generators were suggested. Fortunately these doubts have proved groundless, the performance of the converters having come fully up to requirements.

The rectifiers also, in general, have performed well,—particularly those of foreign manufacture. In the others, some improvements are still desirable and it is hoped that our American manufacturers will not permit themselves to be outdone for long. Because of the higher efficiency of rectifiers, they are naturally kept on the service for the long hour load. The close regulation is performed by the synchronous converters. As already stated, the exacting regulation specified has been met satisfactorily.

That very important link, without which the major equipment would not perform so satisfactorily,—namely, the high-speed circuit breaker,—has done all that was expected of it. Both in correct selectiveness and in effective current interruption its behavior has been excellent. The duty on these devices is at times heavy. They have effectively limited to a negligible degree the damage resulting from accidental short circuits in overhead wires or rolling stock.

Power Data

The maximum demand of the electrified road on the power system has thus far been approximately 24,000 kw. The total 1927 energy use was slightly under 59,000,000 kw-hr. The annual load factor was thus about 28 per cent. The monthly load factor varied from 32½ per cent to over 39 per cent.

At the time of the power companies' maximum load this last winter, the railroad's load was about 7 per cent lower than it was at the time of its maximum, which occurred a week earlier. It should be noted that this diversity existed even though the portion of the road thus far electrified—suburban service, only, in winter has a daily load characteristic which closely approximates that of the power company. With the addition of the freight and of the through passenger service, this diversity should be much higher.

The increased business that the railroad has enjoyed since electric operation was begun has shown the inadequacy of the estimates originally made with reference to probable power requirements when the other branches of its service are added. The revised estimates have not yet been completed.

The power company has made some rough estimates with reference to electrification of the entire Chicago

railroad service. The combined railroad load is estimated to have an annual load factor of about 62 per cent. Further improvement may be possible by shifting freight time tables. From the power company's point of view, this is a very desirable load. The railroads, on their part, receiving their supply from the large power pool, would enjoy, among other things, the advantages of the high generating efficiency of the rapidly growing system, the comparatively large reserve, and the absence of heavy capital requirements for power purposes.

The estimated maximum demand for 1928 for all the railroads in the Chicago region, were they electrified, is on the order of 125,000 kw. This is but a little over 8 per cent of the interconnected generating capacity of the region; actually less than the single item of reserve normally carried by the power companies. Two points are brought out by these figures; (a) that the investment necessary to provide the power requirements of electrified railroad business is not a burdensome item in the power company's budget, and (b) that the particular form of energy required by the railroad will not have any appreciable influence on the general engineering plan of the power company.

While these conclusions are based on the conditions existing in the Chicago region, they will probably be found to apply with at least equal force elsewhere. The ever enlarging area being covered by substantial power systems with their far flung transmissions is constantly increasing the ease of obtaining a suitable supply of energy for railroad electrifications, as the railroads find, with the progress of time, that economic or other conditions make electrification desirable. Power systems will serve the railroads most effectively when there is a willingness to serve in the manner demanded so that the railroads in turn can produce their service as best suits the requirements of good transportation.

Two papers on the subject of mercury arc rectifiers were also presented. These were "Mercury Arc Rectifier Substations" by George E. Wood, supervisor of power stations, The Connecticut Company, New Haven, Conn., and "Effect of Street Railway Mercury Arc Rectifiers on Communication Circuits" by Charles J. Daly, transmission and protection engineer, Southern New England Telephone Company. These papers indicate that the mercury arc rectifier is now a reliable and efficient means of converting alternating current power to direct current power. The rectifiers installed without filtering apparatus caused some trouble with neighboring telephone circuits due to inductive interference but in the cases cited, this trouble was removed without great difficulty.

* * *

On the Norfolk & Western Between Kenova and Williamson, W. Va.

Coolidge "Holes Through" Cascade Pioneer Tunnel

AT four o'clock on the afternoon of May 1, President Coolidge at the White House in Washington, D. C., pressed the telegraph key which set off the final blast in the pioneer bore of the Great Northern tunnel through the Cascade mountains between Berne, Wash., and Scenic. About 7 ft. of rock barrier remained between the two headings at the time of the final blast. Cross cuts have been made from the pioneer tunnel to the center heading and work is being prosecuted on the enlargement at several places so that the work on the main tunnel is far along and will probably be completed this Fall.

A preliminary check of the engineering work made at the time of the final blast showed that the difference in distance, between the calculations and the preliminary check, was less than 1 ft., that the difference in alignment was 6 in. and that the difference in elevation was 3 in. Four hundred pounds of dynamite, about 50 per cent of which was low freezing gelatine, were used for the blast. On the occasion of setting off the final blast President Coolidge issued the following statement:

"Shortening and speeding up of the processes of communication have marked the progress of civilization from the earliest times. It is because I believe each advance of this kind is of real significance that I am glad to take part in the construction of the Cascade tunnel by setting off the blast which on May 1 will remove the barrier between its pioneer headings. This artery of transportation, the longest tunnel in the western hemisphere, is of importance not alone to the state of Washington and the Great Northern Railway Company but to industry and agriculture generally and indirectly to each and every one of us. My congratulations go to those who have made it possible."

A banquet was held at the west end tunnel construction headquarters on the evening of May 1 and at that time Ralph Budd, president of the Great Northern, sent a message to the men in attendance in which he said in part:

"The meetings of the pioneer headings at the Cascade tunnel is cause for congratulations from several points of view. The progress is more rapid than ever was made before on any similar undertaking. I therefore congratulate you who are carrying on this great work upon your having broken several world's records in tunnel construction and shall make bold to predict that the records made here will stand unbroken for many years.

"The new tunnel, together with the other improvements being made between Wenatchee and Everett, will substantially better the Great Northern which already possesses such outstanding physical advantages. Thirty-five miles of winding mountain line, with curvature enough to make 12 complete circles will disappear forever from railway operation. Twenty miles of nearly straight line crossing the Cascade mountains on easier grades at 500 ft. lower altitude will take its place. The line for 75 miles between Wenatchee, Wash., and Skykomish will be operated electrically. Lessening of distance, curvature, grades and summit elevations serves to bring important parts of the country closer together, and to promote the growth and prosperity of the nation.

"I consider this tunnel the most important single improvement ever made to the existing lines of the Great Northern system. I look forward confidently to the completion on time of the project so well begun."

Railway Fuel Problems Discussed at Chicago Convention

Opening session notable for able addresses—Reports on steam turbine and Diesel locomotives

THE twentieth annual convention of the International Railway Fuel Association was held May 8 to 11, inclusive, at the Hotel Sherman, Chicago, about 500 members and guests being present at the opening session. The meeting was called to order by President J. E. Davenport, division superintendent of the New York Central, who outlined the growth of the association from an initial membership of 35 in 1908 to a total of 1,350 active and associate members in 1928. Mr. Davenport called attention to recent creditable records in fuel economy, which would have been largely impossible without the active co-operation and efforts of members of the International Railway Fuel Association, and said that the Executive Committee expects the membership to exert still further efforts in this direction, thus justifying the support and encouragement which they have received from their respective railway managements.

Following the President's address, T. W. Evans, vice-president of the Indiana Harbor Belt, was introduced, an abstract of his remarks appearing below. Samuel Wyer, consulting mining engineer, also made an address in which he explained the economics underlying the present coal situation. He said that a permanent fact-finding agency should be established, preferably under the jurisdiction of the Department of Commerce, to compile and distribute accurate information to the general public, thus bringing about an enlightened public opinion, without which the present difficulties of the coal industry can never be solved.

On the afternoon of the opening day, three important reports were presented, that on steam turbine locomotives being the first of its kind to be offered by an association of American railway men. The report on stationary power plants was the most complete and instructive report on this subject ever attempted, at least relating to railway plants. The report on Diesel locomotives contained a number of new features and a large amount of useful information on this important subject.

Economical Fuel Use

By T. W. Evans

Vice-President, Indiana Harbor Belt, Chicago.

During 1927, the Class 1 railways used 107,000,000 tons of fuel in locomotive road freight and passenger service (fuel oil reduced to tonnage basis); in work train service, 3,000,000 tons; in yard switching service, 22,000,000 tons; for stationary power plants, 17,000,000 tons; or a total of approximately 150,000,000 tons, at a cost of about $600,000,000. This indicates the field for fuel economy efforts in which much has been accomplished but much remains to be done.

If fuel had been used only as efficiently in 1927 as in 1920, the cost of fuel used in road freight service last year would have been about $71,000,000 greater that it was.

If fuel had been used only as efficiently in passenger service in 1927 as it was in 1920 the fuel used in that service last year would have cost about $17,000,000 more than it did.

Therefore, the increase in efficiency in the use of fuel between 1920 and 1927 resulted in a saving of about $88,000,000. The total saving in the cost of fuel during the seven years ending with 1927, owing to increases in efficiency of its use in road service, was approximately $360,000,000.

The saving shown would be substantially larger if it were possible to add estimates of the results of increased efficiency in the utilization of fuel in yard service and power plants.

The measures of the increase in efficiency with which fuel has been used are the reductions that have occurred in moving 1,000 gross tons one mile in freight service and in moving each passenger train car one mile in passenger service. To the results secured, the operating officers and employees of the railways, who have increased train loads and speeded up the movement of trains; and, especially, the members of the International Railway Fuel Association who have devoted themselves intensively to the subject of fuel economy, have all contributed.

While other associations and groups of railway men have materially assisted in constructive work that has resulted in increased car mileage and increased gross ton miles per quantity of fuel consumed, there is no doubt that credit belongs to this association for initiating the movement which has reached such large proportions.

From your experience, you know how the reductions in the fuel bills of the past have been brought about, but how may they be continued in the future? I think we are agreed that hearty co-operation of all branches of railway activity is necessary. While we know there is great appreciation of what has been accomplished, we feel you men know there is still room for improvement in fuel consumption, notwithstanding the very gratifying results obtained thus far.

We think it important to stress the psychological effect upon the individual of establishing units that will result in measuring his performance. If it is hoped properly to impress the individual employee with the work we undertake, it is important that we avoid waste in other ways. He knows that by his own efforts he can save only a comparatively small amount in fuel or other costs and he will naturally be disposed to relax his efforts if he observes large wastes due to other causes, such as failure to properly maintain the locomotive, unsatisfactory conditions at coaling plants, delays to engines because of trains not being ready at the time called for, trains being permitted to stand outside of yards, etc.

Optimism Prevails

We are optimistic about the future. Railway freight business will continue to grow, although its growth will

depend to a considerable extent upon the efforts railway managements make to develop new sources of business and to devise and carry out methods that will enable them to meet the competition of other transportation agencies.

The efficiency of operation will continue to increase and what has been accomplished along these lines within recent years is a token of what can be accomplished in the future by the investment of capital in needed improvements; by continuance of the efforts of the railway equipment and supply manufacturers to furnish better equipment and improved devices of all kinds; by the exercise of the initiative, intelligence and energy of railway officers and by the co-operation of all classes of railway employees.

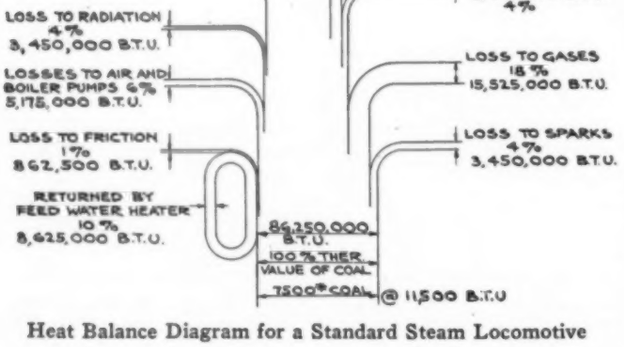
The accomplishments in improved utilization of fuel and thereby reduced total cost to the railways affords one of the best illustrations available of the methods that should be used to increase operating efficiency and economy in general and of the results that can be obtained by the use of such methods.

There will, in my opinion, be no sufficient reason for being apprehensive regarding the future of the railways so long as there is such cooperation between the railway equipment and supply manufacturing industry, railway managements and railway employees in improving plants and operation as there has been during the eight years that have elapsed since the railways were returned to private operation.

Report on Steam Turbine Locomotives

[The committee traced the development of the steam turbine locomotive from the first one designed in 1907, by Professor Belluzzo of Milan, Italy, to recent European developments, including the Maffei-Benson turbo-condensing locomotive, generating steam at a critical pressure of 3,200 lb. and developing 2,000 normal rated hp; the Krupp 2,000-hp. turbo-condensing locomotive with a water-tube, marine-type boiler, utilizing a steam pressure of 850 lb; the Henschel turbo-tender driven by exhaust steam from either a piston or a turbine locomotive and the Ljungstrom type locomotive, which has been in regular service on the Swedish state railways since March, 1927.—Editor.]

Other projected designs, exhibited recently by representatives of the Ljungstrom Company for condensing

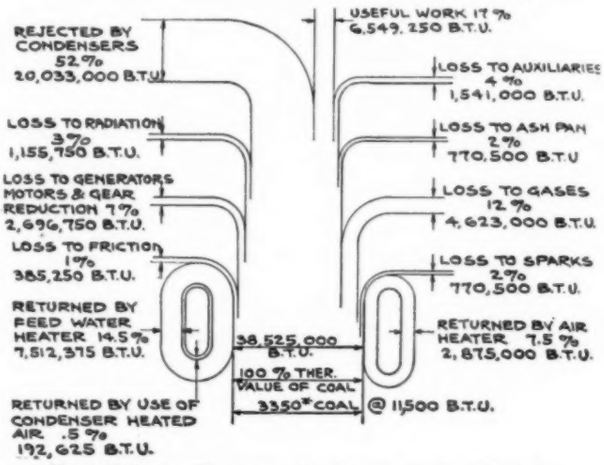


Heat Balance Diagram for a Standard Steam Locomotive

turbo-locomotives show horsepowers ranging from 4,000 to 8,000 with tractive forces from 78,000 to 191,000 lb. The 8,000 hp. locomotive weighs 830,000 lb., including the rear unit, and has ten driving wheels on each unit. A comparison is made with the "Virginian" Mallet, which weighs with tender 898,000 lb. and develops 176,600 lb. tractive force. Steam pressures for both locomotives are taken as 215 lb. per sq. in.

Some claims made for these locomotives over existing types are: more gross ton miles per hour owing to increased capacity and 25 per cent greater starting power with the same adhesion weight. The torque is considerably increased at lower speeds, thus greater hauling capacity at the same maximum output. Greater utilization results in fewer locomotives needed. Non-stop runs of 500 to 700 miles are possible.

Full credit should be given the European railways and particularly to the Swedish and German engineers



Heat Balance Diagram of a Steam Turbo-Electric Locomotive

for their fearless and progressive attitude toward improvement of the steam locomotive.

They have been the pioneer designers of the steam turbine locomotives and have contributed a mass of valuable information relative to the design and operation of this type of motive power.

After carefully checking the progress made in Europe, we believe that this type of locomotive deserves serious consideration. A locomotive of this type should have many advantages over the present type. We believe that the best method of bringing the turbine locomotive to the attention of this association is to make definite recommendations covering a specific design.

[The committee here described the important details of a proposed design of 2,500-hp. steam turbo-electric locomotive, suitable for either heavy passenger or fast freight service, and having a starting tractive effort of 100,000 lb. and a maximum speed of 65 m.p.h.—Editor.]

Advantages of Turbo-Electric Locomotive

The turbo-electric locomotive has a high tractive force at low speeds which gives it a distinct advantage over the standard steam locomotive. In other words, the turbo-electric locomotive is able to produce a greater tractive force than the standard locomotive, at any speed, due to its being able to work its power plant at practically full capacity under all conditions. It can, therefore, handle greater tonnage under any and all conditions. This makes the turbo-electric locomotive practically on a par with the electric locomotive, within the limits of its power plant capacity.

The electric locomotive, however, can operate only over tracks which have been electrified at a cost of several thousand dollars per mile, not including the cost of power stations and substations.

The steam turbo-electric locomotive can operate where any standard steam locomotive can be used and can also be designed to operate over electrified zones and operate its motors with electric current received from an overhead wire or a third rail used by the electric locomotive.

The turbo-electric locomotive should have many advantages over the standard steam locomotive, particularly so when equipped with pulverized coal burning apparatus which should make operation practically as flexible as when oil is used for fuel. The stand-by losses, with powdered coal for fuel, should be very low and the time required for cleaning ash pans reduced to a minimum. The operation should also be practically smokeless.

The use of boiler feed water, evaporated and purified on the locomotive, should reduce the cost of water to a minimum. It should also reduce the labor and maintenance cost for the locomotive boiler and keep it clean and efficient at all times, and practically eliminate the necessity for boiler washing.

During the last few years, there have been many articles in the technical press, covering the steam turbine locomotive. A list of these articles has been made a part of this report.

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The report of the committee was signed by L. P. Michael (C. & N. W.), chairman; G. S. Goodwin (C. R. I. & P.), C. H. B., (C. M. St. P. & P.), W. O. Moody (I. C.), H. Gardner (Steamotor Company), G. H. Roosevelt (General Electric Company), C. D. Perkins (Modine Manufacturing Company), W M. Sheehan (Commonwealth Steel Company), V. G. Leach (Peabody Coal Company), and J. Crites (Raymond Bros. Impact Pulv. Co.)

Diesel Locomotives

The Committee on Diesel Locomotives presented a very complete report of the developments in the Diesel locomotive field during the past year. The report covers the developments in both this country and in Europe and gives considerable construction and test data on the more important locomotives. The last part of the report is devoted to a partial bibliography of articles on Diesel locomotives that have been published in the technical press. This literature indicates a trend toward direct drive and the design of composite locomotives; that is, Diesel-steam engines.

The Kitson-Still Locomotive

The Kitson-Still locomotive is a step in this direction. It is a combination of an oil engine with a steam engine, the steam being generated in a separate boiler by the waste heat of the oil engine, and being expanded in the oil engine cylinder on the opposite side of the piston. The boiler is placed in communication with the water jackets of the engine cylinder, and thus both the cylinder jacket heat and the exhaust gas heat are utilized for steam generation. This engine in addition to its low fuel consumption, offers a good combination for train starting, the steam being an ideal fluid for this purpose. If the engine has not been run before starting it becomes necessary to heat the boiler with a specially provided oil burner in order to generate steam for starting. However, in so doing, the cylinders are warmed up, ignition is facilitated and starting on oil is rendered more easy. The presence of a boiler on an oil engine locomotive should prove to be of great value as it offers a large amount of stored and available energy, especially with the oil burner in operation which can be utilized on heavy grades and in emergency, even though at a sacrifice of fuel economy. Furthermore, steam from the boiler can be utilized to heat passenger trains.

The Kitson oil engine is of the four-cycle type and has eight horizontal cylinders driving a four-crank shaft placed underneath the boiler and geared to a jack shaft. The boiler is of the locomotive type with a modified firebox. The outside cylinder ends are those of the oil engine, the inside ends being those of the steam engine. The cylinders are 13½ in. in diameter by 15 in. stroke. At 450 r. p. m., which corresponds to a locomotive speed of 45 m. p. h., the crank shaft horsepower is about 880 b. hp. on internal combustion sides, and about 1000 b. hp. on both the combustion and steam sides. Rail tractive force at this speed is 7000 lb. Starting takes place through the action of steam on the inside surface of all eight pistons. The starting tractive force is 24,500 lb. at a boiler pressure of 200 lb. The estimated weight of the locomotive is 156,800 lb., which is 157 lb. per b. hp. at maximum speed, or almost the same as in ordinary steam locomotives. The wheel arrangement is 2-6-2; the

weight on drivers is 114,240 lb., the adhesion factor being 4.5.

Future Production of Diesel Oil For Locomotives and Rail Cars

The Committee reported that there is no justifiable apprehension as to the future adequate supply of crude oils from which suitable fuel oil for Diesel engines can be derived. One of the principal safeguards against curtailment of Diesel oil is provided by the economy in fuel consumption of the Diesel engine. Furthermore, it was felt by the Committee that the price of Diesel oil will not go above the level where Diesel engines can not favorably compare with steam engines.

Comparison of Diesel and Steam Locomotive Operations

A questionnaire was sent to fourteen railroads and other companies operating Diesel locomotives, requesting comparative data on Diesel and steam locomotive operation. Seven companies returned the questionnaire with the information requested. The data furnished has been compiled and the results inserted in the report in tabular form.

The data submitted by the seven companies show that the number of days that the units were in service ranged from 178 to 661, with the average hours per day ranging from 6 to 24. The table gives comparative cost figures for Diesel and steam operation covering fuel, lubrication and other supplies.

The savings in operating expenses of the Diesel over that of the steam locomotives ranges from 7.33 per cent to 55.7 per cent. The column headed saving with interest and depreciation included is subdivided into five columns headed, total investment, interest on investment, depreciation on investment, total expenses (including interest and depreciation) and savings effected. From the figures given under these headings it may be noted the cost of steam locomotives used in figuring interest on investment and depreciation is, in many cases, prices paid 20 years ago and if figured at current prices, they would be considerably higher. There also may be noted a wide variation in the rates of depreciation used by the different railroads for both classes of power.

Comparison Between Russian Diesel Gear and Electric Locomotives

The Diesel locomotive with gear transmission and magnetic clutches, built in Germany for the Russian State Railways, was placed in service in March, 1927, and since then has been moving freight between Moscow and Kursk, a distance of 331 miles.

The comparison of the two Diesel locomotives shows that locomotive No. 2 (electric transmission) made a total of 3,306 thousand gross ton-miles and consumed 43,150 lb. of oil, or 13.05 lb. of oil per 1,000 gross ton-miles; locomotive No. 3 (magnetic gear transmission) made, with trains of approximately the same tonnage and speed, over the same distance and under approximately the same weather condition, 3,455,000 gross ton-miles and consumed 40,780 lb. of oil, or an average of 11.81 lb. of oil per 1,000 gross ton-miles. This represents a saving of 9.5 per cent in favor of the Diesel locomotive with gear transmission, and is in conformity with figures for efficiency obtained from stationary tests with the same locomotives.

Oil burning steam locomotives in Russia consume with similar trains about 80 lb. of oil per 1,000 gross ton-miles, or from six to seven times as much as the Diesel engine locomotives.

The report was signed by Clarence Roberts, chairman, (Penn.), H. P. Allstrand, (C. & N. W.), L. G. Coleman, (Ingersoll-Rand Company), Harte Cook, (McIntosh, Seymour Company), J. E. Davenport, (N. Y. C.), A. I. Lipetz, (American Locomotive Works), J. K. McNeillie, (D. & H.), F. E. Russell, (S. P.), C. B. Smith, (B. & M.), Carl E. Uddenberg, (State Railways of Sweden), and W. H. Winterrowd, (Lima Locomotive Works).

[Further proceedings of the convention will be published in next week's issue.—EDITOR.]

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading during the week ended April 28, amounting to 961,928 cars, was the largest for any week to date this year. The previous peak was 959,537 cars during the week ended March 3. The total for the week ended April 28 represented a decline, however, of 59,648 cars as compared with loading in the corresponding week of last year and of 33,480 cars as compared with 1926. The decrease from last year's total was caused principally by the slump in ore loading, which amounted to 14,060 cars, as compared with 49,104 cars a year ago. Loading of miscellaneous freight amounted to 384,646 cars, a decrease of 11,079 cars as compared with the corresponding week of last year. Relatively small decreases were shown in other commodity classifications and grain and grain products and livestock recorded slight increases. Loadings in the Central Western and Southwestern districts were larger than a year ago. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Districts	Week Ended April 28, 1928	1927	1926
Eastern	231,878	238,631	245,271
Allegheny	197,473	207,070	206,153
Pocahontas	52,597	63,208	51,322
Southern	142,676	159,135	153,207
Northwestern	123,370	149,922	124,691
Central Western	138,142	134,190	138,586
Southwestern	75,792	69,420	76,178
Total Western Districts	337,304	353,532	339,455
Total All Roads	961,928	1,021,576	995,408
Commodities			
Grain and Grain Products	43,240	43,154	37,973
Live Stock	29,800	29,456	31,843
Coal	156,663	162,069	165,635
Coke	10,504	11,161	12,113
Forest Products	63,819	70,671	77,559
Ore	14,060	49,104	20,811
Merchandise L.C.L.	259,196	260,236	262,904
Miscellaneous	384,646	395,725	386,570
April 28	961,928	1,021,576	995,408
April 21	944,694	950,545	973,158
April 14	912,377	949,561	964,794
April 7	919,296	953,907	929,343
March 31	948,427	986,462	928,303
Cumulative total, 17 weeks	15,527,743	16,416,714	16,032,431

The freight car surplus during the period ended April 22 averaged 340,608 cars, as compared with 350,928 cars on April 15. The total included 159,428 coal cars, 132,049 box cars, 22,937 stock cars and 14,900 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended April 28 totalled 63,763 cars, an increase of 1,568 cars over the previous week and an increase over the same week last year of 1,544 cars.

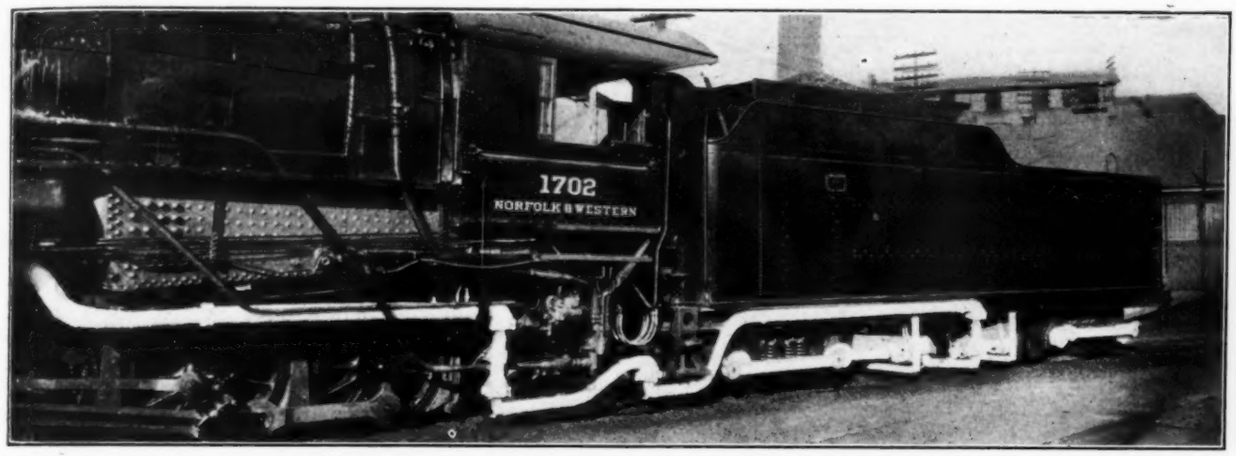
	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
April 28, 1928	63,763	41,972
April 21, 1928	62,195	41,209
April 14, 1928	58,976	38,280
April 30, 1927	62,219	38,046
Cumulative Totals for Canada		
April 28, 1928	1,059,603	679,339
April 30, 1927	1,025,770	667,836
May 1, 1926	934,987	636,526

Franklin Reversible Locomotive Booster

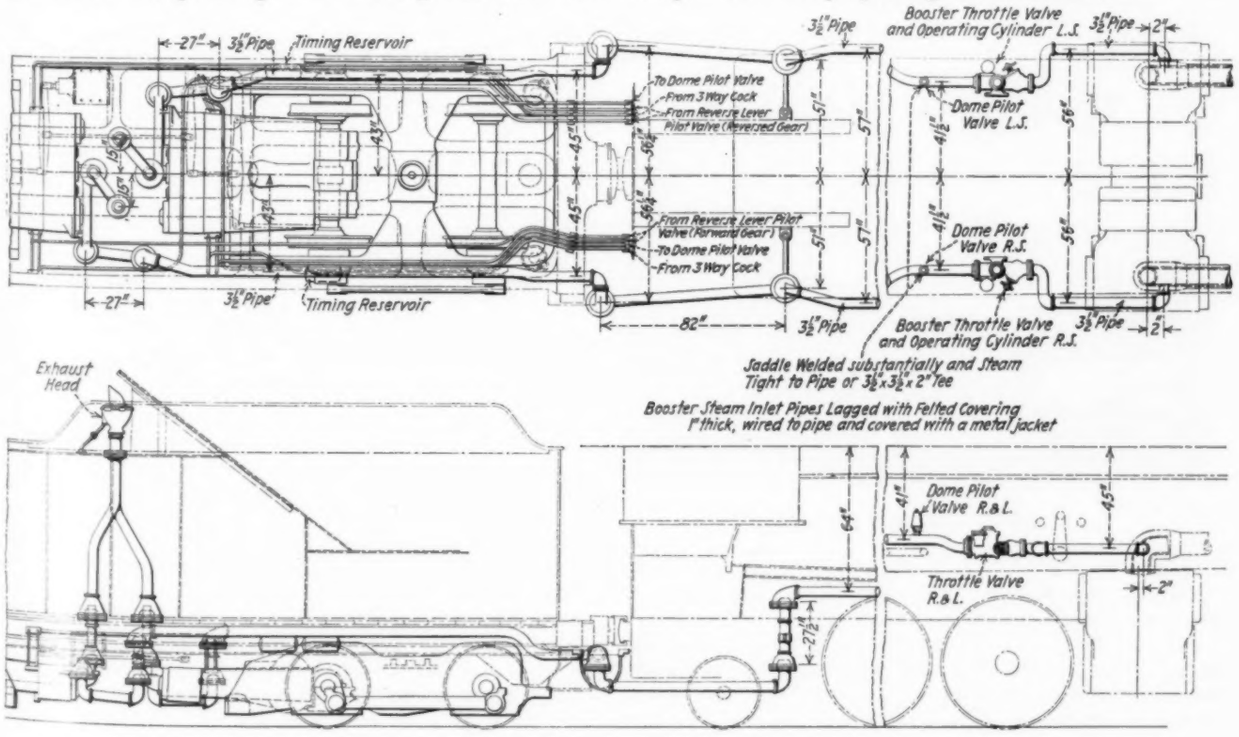
THE Franklin Railway Supply Company, Inc., 17 East Forty-second street, New York, has redesigned the control system, clutch and gear arrangement, of its locomotive booster so that it can be operated both forward and reverse. This feature was added to meet the variety of operating conditions encountered in switching and hump yard service, and also in road service where the additional power is needed not only in the forward direction but also when backing up.

All but a few of the parts of the reversible booster are identical with those of the one-way booster. The control system is the same, except the reverse lever pilot valve, for which has been substituted an entirely new valve incorporating the reversing function. The only changes made in the booster engine itself are an alteration in the clutch cylinder and the addition of another gear to the train. Instead of having a clutch cylinder which operates in one direction only, the reversible booster is provided with one operating in both directions. In the forward motion, air is admitted to the underside of the piston in the clutch cylinder. This moves the idler gear rocker, which is pivoted on the crankshaft, in the same direction as the clutch cylinder, which meshes the top idler gear (1) with the axle gear. This drives the axle in the forward direction.

To reverse the booster, air is admitted to the top of the clutch cylinder piston which moves the smaller and lower idler gear (2) into mesh with the axle gear which transmits the drive from the crankshaft to the large idler gear (1) thence to the small idler gear (2) and finally to the axle gear. The booster engine always revolves in the same direction, the reversing being accomplished entirely by the gear mechanism.

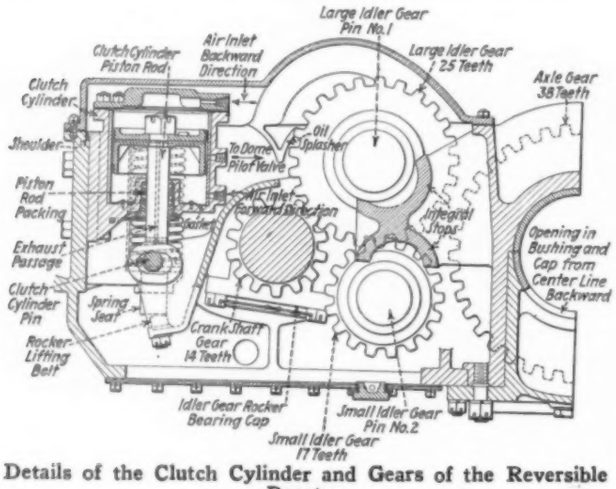


Installation of Two Tender Boosters for Hump Yard Service


27"
3½" Pipe
Timing Reservoir
To Dome Pilot Valve
From 3 Way Cock
From Reverse Lever Pilot Valve (Reversed Gear)
From Reverse Lever Pilot Valve (Forward Gear)
To Dome Pilot Valve
From 3 Way Cock
Booster Throttle Valve and Operating Cylinder L.S.
Dome Pilot Valve L.S.
Dome Pilot Valve R.S.
Booster Throttle Valve and Operating Cylinder R.S.
82"
Saddle Welded substantially and Steam Tight to Pipe or 3½"x3½"x2" Tee
Booster Steam Inlet Pipes Lagged with Felted Covering 1" thick, wired to pipe and covered with a metal jacket
Exhaust Head
Dome Pilot Valve R.&L.
Throttle Valve R.&L.

Installation of Two Reversible Tender Boosters

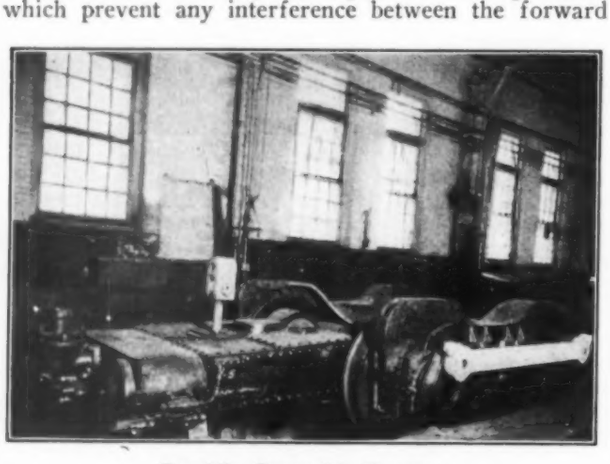
The application of torque through the crank shaft when the idler gear (1) is in mesh with the axle gear and the locomotive is moving in the forward direction, makes the idler gear self-energizing; the greater the torque, the greater is the tendency of this gear to stay in mesh. However, when the booster is shut off, the motion of the axle gear tends to throw the idler gear out of mesh and into a neutral position. When the booster is operating in the reverse direction, the resultant forces tend to keep the idler gear (2) in mesh with the axle gear without the application of external force, but when the booster is shut off; the direction of motion of the axle disengages the idler gear (2).



Details of the Clutch Cylinder and Gears of the Reversible Booster

There are no idlers in mesh with the axle gear when the booster is not in service. No special devices are required to hold the idlers in mesh with the axle gear. When the booster is cut out at speed, the reversal of the torque disengages the gears. There is a definite, neutral position to which the mechanism returns after using either of the two idler gears.

Suitable interlocking arrangements are provided which prevent any interference between the forward and reverse gears. It is impossible for the engineman to engage the booster in reverse if the locomotive is moving forward, and vice versa.



Franklin Reversible Booster

It was found from experience with the one-way booster that in certain conditions of hump and helper service, the use of two boosters on one locomotive would be profitable. The problem of coordinating two boosters with the main engine was worked out without unduly complicating the control mechanism. A single control, actuated by the engineman, a diagram of which is shown in one of the drawings, enables him to use either or both boosters in either direction, yet the control mechanism is so interlocked that the boosters cannot operate opposite to the direction of motion of the main engine. Either or both boosters can be idled.

Air Brake Men Close Successful Meeting

ON May 4 the Air Brake Association completed the work of its thirty-fifth annual convention, which was held at the Book-Cadillac Hotel, Detroit, Mich., and adjourned to meet next year at Chicago. The program, a partial report of which was published in the May 5 issue of the *Railway Age*, consisted of a total of 13 committee reports and papers, including such subjects as Triple Valve Union Gaskets —Rubber v. Leather; Main Reservoirs; Yard Air Plants; Maintenance of Steam Driven Air Compressors; What Is the Best Material for Air Brake and Air Signal Piping?; Welding Locomotive Air Piping by the Oxy-Acetylene Process Excluding Dirt and Moisture from Passenger Brake Cylinders; Recommended Practice, and Power Brakes for Automobiles. An abstract of the last named paper will appear in an early issue of the Motor Transport Section of the *Railway Age*.

Although the attendance at the convention, about 650, did not approach the record attendance at the convention held in Washington, D. C., in 1927, the exhibit of the Air Brake Appliance Association was one of the largest and most complete ever held in the history of the association, a total of 63 companies having products on display.

Election of Officers

According to the customary procedure, all of the officers were elected to the next higher position, H. L. Sandhas, general inspector, Central Railroad of New Jersey, being elected president for the ensuing year. J. E. Gardiner, general air brake inspector, Boston & Maine, was elected a new member of the Executive Committee. The newly elected officers are as follows: President, H. L. Sandhas (C.R.R. of N. J.); first vice-president, W. W. White (Michigan Central); second vice-president, W. H. Clegg (Canadian National); third vice-president, R. M. Long (P. & L. E.); secretary, T. L. Burton (N.Y.C.); treasurer, Otto Best (Nathan Mfg. Company). The members of the executive committee are W. F. Peck (B. & O.); C. H. Rawlings (D. & R.G.W.); E. Z. Mann (A.C.L.); E. Von Bergen (I.C.), and J. E. Gardiner (B. & M.).

PORTABLE AIR COMPRESSORS.—The sixth edition of "100 and 1 Ways to Save Money With Portable Compressors," has just been published by the Ingersoll-Rand Company, New York, including 140 pages, with 300 illustrations attractively laid out in a two-color arrangement. In this book the company has embodied comparative cost data on its portable air compressors and air-operated tools, such as rock drills, paving breakers, clay diggers, backfill tampers, grinders, hoists, riveting hammers, chippers, metal drills, etc. The information has been put together for ready reference purposes in the cross-index form. In most cases figures are presented on a man-hour basis, so that they can be readily applied to local conditions anywhere, in order to show the possible savings from the use of portable compressors and pneumatic tools.

Security Owners Disturbed Over Western Rate Situation

WASHINGTON, D. C.

PRESIDENT Milton W. Harrison, of the National Association of Owners of Railroad and Public Utility Securities, has transmitted a letter to the chairman of the Interstate Commerce Commission calling attention to the seriousness, from the security holders' standpoint, of the rate situation among carriers in the Western territory, and urging the necessity of maintaining rates that will produce a fair return on the aggregate value of railroad property in Western territory. The letter in part follows:

"We are thoroughly disturbed over the insistence of certain interests, in the face of the existing low rates in Western territory, for reductions in grain and livestock rates in that section under the Hoch-Smith resolution without compensating increases on other commodities. Such action would unjustly and illegally injure security holders of lines operating in that locality.

"It is well known to the commission that the carriers in the Western district, particularly those in the Northwestern region, have for a number of years failed to earn a fair return on the aggregate value of their properties, computed on any reasonable basis; and in this respect their condition is not temporary but a persistent one. The commission is under an affirmative legal duty in compliance with Section 15a to correct promptly the situation which adversely affects the security holders and to initiate and establish rates which will permit the western carriers as a whole to earn a fair return. Under the Hoch-Smith resolution the commission is, beyond a doubt, also obliged to re-distribute the transportation burden among the commodities so that the products of agriculture, including livestock, will carry the lowest possible rates, giving due regard 'to the maintenance of an adequate system of transportation'.

"The association believes that the Hoch-Smith resolution should be administered in such a manner as to give force and effect to it without impairing the obligations of Section 15a. The commission has correctly held that the resolution must be given a construction which would not repeal or invalidate Section 15a, and that the terms of the resolution must be harmonized with the provisions of that section. The requirements of Section 15a, therefore, that the aggregate rates be sufficiently high to enable the carriers to earn the prescribed return, is not impaired by the terms of the resolution. Having in mind this construction, it inevitably follows that if the rates on agricultural products are to be lowered and the carriers can not stand net reductions in their revenues, there must be at the same time a readjustment in other rates so that increases will offset the required reductions and in the aggregate yield the fair return.

"The carriers in the western group cannot stand net reductions, but in fact are entitled to substantial increases in the present rates. A net reduction in their already insufficient revenues will greatly impair the confidence of investors in these carriers. In consequence a condition exists seriously threatening the future maintenance and development of railroad transportation in that section. These conditions should be remedied, *not aggravated,* and should be made such as to induce the further investments of large funds in railroads.

"The association respectfully requests the commission to act promptly and in compliance with the Congressional mandate. The commission should and we have no doubt will give effect to Section 15a by establishing rates which will permit the carriers as a whole in Western territory to earn their prescribed return. Should a reduction in the rates on agricultural products be ordered, the commission will we are confident, simultaneously through a mandatory order require rates on other classes of freight to be revised so as not only to offset the reduction with corresponding increases, but to furnish the additional revenue necessary to produce the return specified under Section 15a.

"The holders of railroad securities look with confidence to the commission to carry out all provisions of law in order that capital may be encouraged in the future to invest in this section."

Barge Line Bill Revised

WASHINGTON, D. C.

A FAVORABLE report was ordered by the House Committee on interstate and foreign commerce on May 4 on a revised form of the Denison bill to increase the facilities and extent of the activities of the Inland Waterways Corporation, on which the committee has held extensive hearings. Representative Denison reintroduced the bill as H.R. 13,512, with some changes the day before. It provides for an increase from $5,000,000 to $10,000,000 in the capitalization of the Inland Waterways Corporation and an appropriation of $10,000,000 for the purchase of the stock by the government.

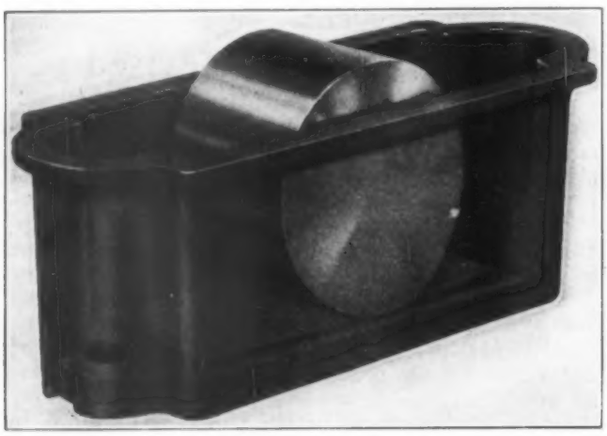
The bill declares it to be the policy of Congress to continue the transportation service of the corporation until (1) there shall have been completed in the rivers where the corporation operates, navigable channels, as authorized by Congress, adequate for reasonable, dependable and regular transportation service thereon; (2) terminal facilities shall have been provided on such rivers reasonably adequate for joint rail and water service; (3) there shall have been published and filed under the provisions of the Interstate Commerce Act, as amended, such joint tariffs with rail carriers as shall make generally available the privileges of joint rail and water transportation upon terms reasonably fair to both rail and water carriers; and (4) private persons, companies or corporations engage, or are ready and willing to engage, in common carrier service on such rivers.

When the Secretary of War shall find that navigable channels and adequate terminals are substantially available, and when the Interstate Commerce Commission shall report that joint tariffs have been filed, the Secretary of War would be authorized to lease for operation under private management, or to sell to private persons, companies or corporations, the transportation facilities belonging to the corporation. Provision is also made for application to the Interstate Commerce Commission for certificates of public convenience and necessity to operate on the Mississippi or Warrior rivers or their tributaries and the commission is directed to require all common carriers and their connections to join with a water carrier that has been given a certificate in through routes and joint rates, the differentials between the all-rail rates and the joint rates to be fixed by the commission. The commission would be directed to require the carriers to enter into negotiations for the purpose of establishing equitable divisions within 30 days and if they are unable to agree in 125 days to establish reasonable divisions.

Representatives of the railways at the hearings objected vigorously to the proposal that the commission should be directed to establish joint traffic arrangements and divisions without a hearing, and, as modified in the revised bill, provision is made for a hearing upon complaint as to the reasonableness of any through route, joint rate or division ordered by the commission and for such order after full hearing as the commission may find to be proper and in the public interest.

Alloy Steel Side Bearing

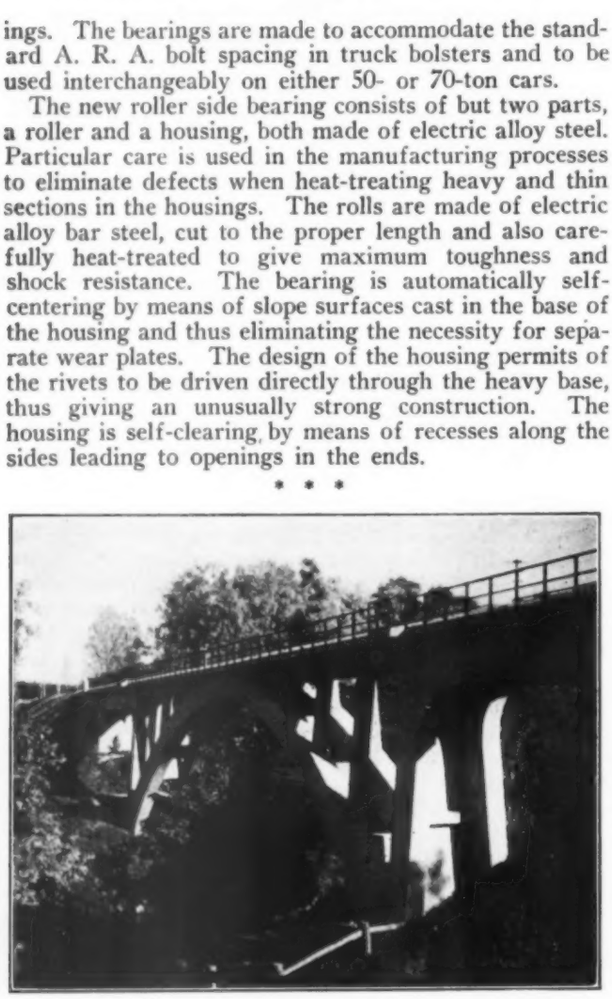
AFTER two years of extensive research, the W & B Company, 1300 East Ninety-second street, Chicago, has developed and recently placed on the market a new type of freight car side bearing made entirely of heat-treated alloy steel and designed for simplicity, maximum resistance to wear and more than sufficient strength to meet present day freight car loadings. The bearings are made to accommodate the standard A. R. A. bolt spacing in truck bolsters and to be used interchangeably on either 50- or 70-ton cars.



W & B Heat Treated Alloy Steel Side Bearing

The new roller side bearing consists of but two parts, a roller and a housing, both made of electric alloy steel. Particular care is used in the manufacturing processes to eliminate defects when heat-treating heavy and thin sections in the housings. The rolls are made of electric alloy bar steel, cut to the proper length and also carefully heat-treated to give maximum toughness and shock resistance. The bearing is automatically self-centering by means of slope surfaces cast in the base of the housing and thus eliminating the necessity for separate wear plates. The design of the housing permits of the rivets to be driven directly through the heavy base, thus giving an unusually strong construction. The housing is self-clearing by means of recesses along the sides leading to openings in the ends.

* * *



One of the 40 Bridges on the New Swedish East Coast

Looking Backward

Fifty Years Ago

The question of appropriating $2,000,000 for the completion of the Cincinnati Southern [now part of the Southern] to Chattanooga, Tenn., was defeated when voted upon by the citizens of Cincinnati, Ohio, on May 6. It was only after considerable effort that the Ohio legislature was prevailed upon to allow the city to vote upon the question.—*Railroad Gazette,* May 10, 1878.

Contracts aggregating $1,500,000 have been awarded by the Atchison, Topeka & Santa Fe for earthwork, tunneling and track laying on the first 100 miles of its New Mexico extension to be completed to Clifton, N. M., by February 1, 1879. This company is also actively pushing forward the construction of the Canon City (Colo.)-San Juan line, the Denver & Rio Grande still being restrained from further work by an injunction.—*Railway Age,* May 9, 1878.

Twenty-Five Years Ago

John M. Davis has been appointed superintendent of the Eastern division of the Great Northern, with headquarters at West Superior, Wis.—*Railway and Engineering Review,* May 9, 1903.

A company in England is introducing a vacuum process for cleaning railway coaches. In operation it is used with a wide nozzle in the same manner as pneumatic pressure is used in this country—the difference lying in that the dust is drawn into the nozzle and through piping to be deposited in a receptacle instead of being merely blown into the air.—*Railway and Engineering Review.*

The chief engineer of the Minneapolis, St. Paul & Sault Ste. Marie has awarded the contract for the construction of 125 miles of new line northward from Glenwood, Minn. It is understood that the line will be extended ultimately to the Canadian border, probably to a connection with the Canadian Pacific line from Winnipeg to Emerson, Man.—*Railway and Engineering Review,* May 9, 1903.

The United States Supreme Court has made public a decision in which it holds that if a shipment from one point to another point in the same state passes through another, the shipment is interstate commerce, and not subject to the jurisdiction of a state railroad commission. The particular case involved was that of a shipment of merchandise over the Kansas City Southern from Ft. Smith, Ark., to Granniss, via Spiro, I. T., the Arkansas Commission contending that intrastate rates were applicable.—*Railway Age,* May 15, 1903.

Ten Years Ago

Charles Donnelly, assistant general counsel of the Northern Pacific, with headquarters at St. Paul, has been appointed general solicitor.—*Railway Review,* May 11, 1918.

Additional reductions in passenger train service on western railroads amounting to 11,728,218 train miles per year will become effective on June 1 in conformance with a report recently prepared by the passenger traffic committee of the western region, P. S. Eustis, chairman.—*Railway Age,* May 10, 1918.

The Railroad Administration has announced the placing of orders for 1,025 locomotives to be built to its standard specifications at a cost of about $60,000,000. It is understood that orders for 175 additional locomotives will be placed in about 60 days and that approximately 1,000 additional locomotives and about 100,000 additional cars are to be ordered within six months. The division of types is as follows: Mikado, 500; Mountain, 40; Pacific, 50; Santa Fe, 185; Six-wheel switching, 50; Eight-wheel switching, 150; (2-6-6-2) Mallet, 30; (2-8-8-2) Mallet, 20.—*Railway Age,* May 10, 1918.

New Books

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

The Empire-Builder, by Oscar M. Sullivan. A biographical novel based on the life of James J. Hill and the construction of railroads through the northwest. 382 p. Pub. by Century Company, New York City. $2.50.

Inland Waterways Corporation. Statement before House Committee on Interstate and Foreign Commerce on H.R. 10710, by C. S. Duncan. "Position of the railroads" p. 25-32. 32 p. Pub. by Association of Railway Executives, Washington, D. C. *Apply.*

John Stevens: An American Record, by Archibald D. Turnbull. The long-needed biography of a strenuous and original early American whose experiments with railways in the early 19th Century caused his contemporaries to regard him as quite mad. Illustrated. 562 p. Pub. by Century Company, New York City. $5.

The Railways in 1927, by R. Bell. Economic and other conditions in Great Britain and America as they affected railways in each. 19 p. Pub. by London & North Eastern Railway, London, Eng. *Apply.*

Tokyo Railway Hospital 1928. Description, with illustrations and plans of the new hospital completed in February to replace the one destroyed by the earthquake-fire disaster in 1923. Costs of building and equipment and list of charges given. 4 p. 6 plans. Pub. by Health and Welfare Section, Minister's Secretariat, Department of Railways, Govt. of Japan, Tokyo. *Apply.*

Periodical Articles

Hill Country, III, by Ramsay Benson. Continuation of another historical novel based on the life of James J. Hill in which the author has used an entirely different method of treatment than that in Mr. Sullivan's listed above. Forum, May 1928, p. 776-789, with comment, p. 795-796.

Replaceable Engines. A description with an illustration of gasoline engines for trucks, buses, and railway locomotives that can be removed and replaced when necessary. Literary Digest, May 5, 1928, p. 25.

Ship Swallows Whole Trains, by Ellsworth Bennett. The hinged-bowed train ferry *Schwerin* in service on the Baltic Sea between Germany and Denmark, which with its bows up looks startlingly like an oversize whale. Illustrated. Popular Science Monthly, June 1928, p. 31.

The Tourist in Guatemala, by Alberto Ibarra M. Special train accommodations and prices, a railway map, and a relief map showing railway lines are among the features of this article. Pan American Union Bulletin, May 1928, p. 497-504.

International Aspects of the European Coal Crisis, by Mack Eastman. The so-called "coal war" in Europe and its immediate and potential effects on the "warriors" and on coal production in North and South America and China. Journal of Political Economy, April, 1928, p. 229-239.

The Meaning of Valuation, by Arthur T. Hadley. This paper "is essentially a study in the use of terms. What are we talking about when we speak of valuation?" p. 173. Supplement to the American Economic Review for March, 1928, p. 173-180.

An Index of the Installation of Machinery in the United States Since 1850, by Carroll R. Daugherty. Summarizes the results of a study carried on for the past three years into the amount of horsepower equipment installed from 1849-1923. Table II on p. 283 shows total horsepower equipment in each field of activity by decades, figures for steam railroads and ships being available from 1849, while electric railroads come in in 1889 and automobiles in 1899. The table on horsepower equipment per employee on p. 290 is another of particular interest. Harvard Business Review, April, 1928, p. 278-292.

Odds and Ends

Mrs. C. H. Powell is the most recent addition to the ranks of railway presidents of the gentler sex. She was elected president of the Texas, Panhandle & Gulf on March 29, succeeding her late husband.

In these days it is the ambition of almost everyone, from the section man to the president, to be taken into the air by Col. Lindbergh. Charles E. Johnson, president of the Kansas City Southern, was fortunate enough to realize this ambition in Washington, D. C., a month or so ago.

G. F. Egbers, master mechanic on the Northern Pacific at Livingston, Mont., is one of the best trap-shooters in the Northwest. He is conceded to be the champion at 16 yards, is president of a gun club and a well-known figure at all shooting tournaments. His friends maintain that he is easily the champion clay-pigeon artist among railroaders.

Little Giants

John H. Handley, claims clerk of the Canadian National at Kingston, Ont., disputes the claim of Foreman Painter Strachan of the Southern Pacific to being the shortest man in railway service. "Why that guy is a giant compared to me," he says. Strachan towers to 4 ft. 11 in., while Handley is 4 ft. 3 in., and weighs 95 lb. He has been in the service of the Canadian National since July, 1912, and is a school trustee of Kingston.

Pacific 2-3-1

In connection with railway music, Arthur Honneger, composer of the symphonic movement: "Pacific 2-3-1," has this to say:

"I have always had a passionate liking for locomotives; for me they are living things and I love them as others love women or horses.

"That which I have endeavored to portray in 'Pacific' is not any imitation of the noises of the locomotive, but the translation into music of the visual impression made by, and physical sensation of it. It sets forth the objective contemplation; the quiet breathing of the machine in repose, its effort in starting, then the gradual increase of speed, leading from the lyric to the pathetic condition of a train of 300 tons hurling itself through the dead of night at a speed of 120 miles per hour.

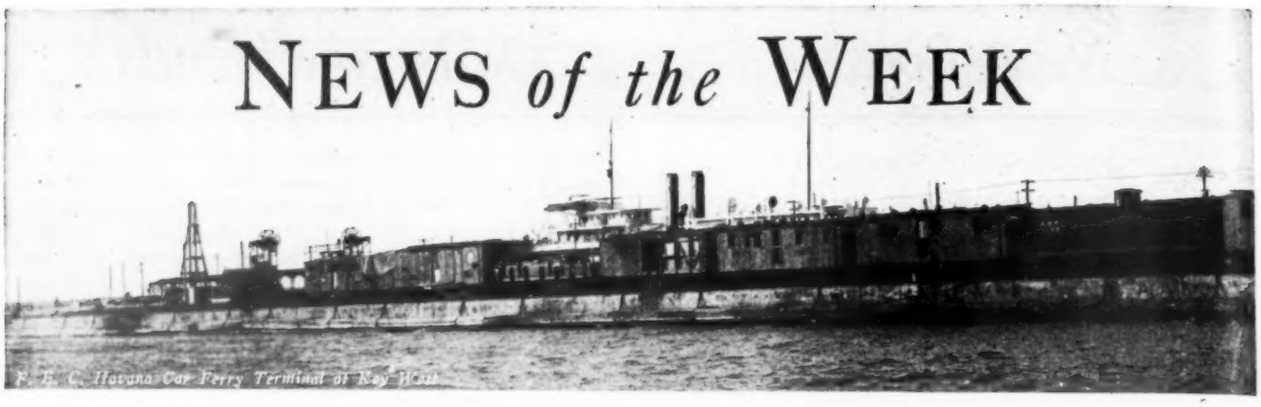
"As 'subject' I have chosen the type of locomotive, Pacific 2-3-1, for heavy trains that are of great speed."

A Canine Railroader

"Duke," who is shown below flagging a train, has other railway accomplishments as well. According to his owner, H. L. Strong, station agent for the Ann Arbor at Azalia, Mich.,

"Duke" can also stamp tickets, pull the chain of the semaphore and act as a "red cap" for passengers. He is reported to know telegraphy too, and when "GN" is sent "Duke" leaps on a table and takes his master's hat off the peg.

NEWS *of the* WEEK



F. E. C. Havana Car Ferry Terminal at Key West

THE MEMBERSHIP of the Association of American Travel Bureaus which was founded in September, 1926, by 26 banks for the purpose of developing the idea of saving and traveling, now numbers 45 banks.

THE NEW YORK RAILROAD CLUB will hold its next meeting on May 18 at the Engineering Societies Building, when a paper will be read on "Various Phases of Railroad Equipment" by C. W. Foss, of Adams & Peck. There will be a special feature of entertainment by the Adams Melody Boys.

THE RAILWAY CLUB OF PITTSBURGH will hold its next meeting on May 24 at Fort Pitt Hotel, Pittsburgh, Pa., when a paper will be read on "Railroad Yard Operation" by H. R. Fertig, chief of yard and terminal operations, Chicago, Rock Island & Pacific.

I. B. TIGREIT, president of the Gulf, Mobile & Northern is conducting an essay contest among the employees of the railroad and their families, on the subject, "What Would You Do If You Were President." The prizes offered total $30 of which $15 will be awarded the best paper, $10 the second and $5 the third.

THE SNOWSTORM of April 27-28 in central and western Pennsylvania was more disastrous to the telegraph and telephone wires of the Pennsylvania than any storm since 1902. Communication between Altoona and Pittsburgh was not restored until 4 p.m. of the 29th. East of Altoona wire communications were carried on by round-about routes for several days.

THE INTERSTATE COMMERCE COMMISSION on May 5 announced a further postponement, to December 31, 1928, of the effective date of its order in the St. Louis & O'Fallon recapture valuation case. It is understood the postponement is to allow time for an appeal to the Supreme Court of the United States from the decision of the lower federal court, which declined to issue an injunction against the order.

DIVISION 6 of the Interstate Commerce Commission has approved, with certain exceptions, the installation of the automatic train-stop system of the General Railway Signal Company on the Baltimore division and a portion of the Baltimore Terminal division of the Baltimore & Ohio from Baltimore to Philadelphia, 92.6 miles. The cost of the installation was reported as $206,347.

THE CONFERENCE REPORT on the independent offices appropriation bill, which carries the appropriation of $7,654,745 for the Interstate Commerce Commission, for the fiscal year ended June 30, 1929, has been approved by both the Senate and the House. The bill has been long delayed by conferences over differences between the two houses of Congress on provisions of the bill other than those affecting the commission.

THE SENATE committee on interstate commerce has ordered a favorable report on S.2309, introduced by Senator Mayfield, of Texas, to amend paragraph 22 of section 1 of the interstate commerce act so as to provide that the authority of the Interstate Commerce Commission in respect of certificates of public convenience and necessity shall not extend to the construction of new lines or the extension of existing lines wholly within one state, if the laws of such state require that a certificate be obtained from the state for such construction or extension.

Bronze Plaques

The National Safety Council will award bronze plaques to the seven railroads which have made the best accident prevention records during 1927, at a dinner to be held in Chicago on May 21. The basis for the awards is the lowest total casualty rate per million man-hours, in each of seven groups of railways. It is the intention of the council to make similar awards each year. The seven railroads to receive the awards for 1927 are, the Union Pacific System, the Union Pacific Railroad, the Oregon Short Line, the Los Angeles & Salt Lake, the Duluth, Missabe & Northern, the Duluth & Iron Range and the Baltimore, Chesapeake & Atlantic.

The Pacific Railway Club Elects Officers

The Pacific Railway Club has elected the following officers for the ensuing year: president, F. E. Yoakum, assistant superintendent, Southern Pacific; vice-presidents, J. B. Baker, agent, Atchison, Topeka & Santa Fe; J. P. Quigley, superintendent of transportation and telegraph, Western Pacific; treasurer, R. G. Harmon, agent, Western Pacific; secretary, William S. Wollner, Northwestern Pacific. The governors of the club are: H. A. Mitchell, vice-president, the San Francisco-Sacramento; A. S. McKelligon, general storekeeper, Southern Pacific; J. A. Christie, superintendent, Atchison, Topeka & Santa Fe, and D. A. Porter, division engineer, Southern Pacific.

Hearing On Firebox Doors

Testimony of locomotive firemen and enginemen in support of the complaint filed by the two engine-service brotherhoods, asking the Interstate Commerce Commission to require the railroads to equip their locomotives with mechanically-operated firebox doors, was concluded at the hearing before Special Examiner Rogers of the commission at Washington on May 4 and testimony on behalf of the railroads in opposition was begun on Monday, May 7.

J. M. Henry, assistant chief of motive power of the Pennsylvania, presented an exhibit compiled from the accident reports filed by the railroad with the commission from 1920 to 1927 comparing the number of accidents which occurred with the hand-operated firedoors and those with the mechanically operated doors. This showed that there were only 2 accidents due to any failure of the firedoor mechanism with the hand-operated doors and 13 with the mechanically-operated doors; 4 accidents due to careless or improper operation of firedoors with the hand-operated doors and 76 with the mechanically-operated doors; and 97 instances of steam, hot water or fire leaking through the door opening with the hand doors as compared with 28 with the mechanical door.

Emergency Wage Board Appointed

President Coolidge on May 4 announced the personnel of the emergency board created by proclamation of April 28 to investigate the wage dispute between the Kansas City, Mexico & Orient and its employees, under the provisions of the railway labor act, as follows: James R. Garfield, Cleveland, Ohio; Carl Williams, Oklahoma City, Okla.; Justice Homer Bliss Dibell, St. Paul, Minn.; Arthur Thatcher, St. Louis, Mo., and Prof. Davis

R. Dewey, Massachusetts Institute of Technology, Cambridge, Mass. The proclamation was issued on April 28 to prevent a strike called for April 29 by the train service brotherhoods. The law provides that the status quo shall be preserved for the 30 days allowed the board to make its investigation, and 30 days more, but the President took several days to complete the appointment of the members of the board.

Flood-Control Bill Modified

The Jones-Reid flood-control bill, as passed by the House and by the Senate, has been considerably modified, in an effort to meet objections to the bill made by President Coolidge, and the conference report was adopted by the House on May 8. As amended it provides that "no liability of any kind shall attach to or rest upon the United States for any damage from or by floods or flood waters at any place", with a proviso that if it is found that upon any stretch of the banks of the Mississippi it is impracticable to construct levees and lands are subject to overflow and damage which are not now overflowed or damaged, it shall be the duty of the Secretary of War and the Chief of Engineers to institute proceedings to acquire either the absolute ownership of the lands so subjected to overflow or floodage rights over such lands.

An amended section 4 of the bill provides that the United States shall provide flowage rights for additional destructive flood waters that will pass by reason of diversions from the main channel of the Mississippi river, with a proviso that in all cases where the execution of the flood-control plan results in benefits to property such benefits shall be taken into consideration by way of reducing the amount of compensation to be paid.

An original provision of the bill that "just compensation shall be paid by the United States for all property used, taken, damaged or destroyed in carrying out the flood-control plan provided for herein, ... and also including all expenditures by persons, corporations and public service corporations made necessary to adjust or conform their property or to relocate same because of the spillways, flood ways or diversion channels," has been stricken from the bill. Some such provision had been urged by a committee of railway engineers, who estimated the cost of changes in their property made necessary by the plan at $71,000,000.

Northern Pacific Clerks and Station Men Granted Increased Pay

The Northern Pacific concluded negotiations on May 1 with the Brotherhood of Railway and Steamship Clerks, Freight Handlers, Express and Station Employees under which about 3,000 employees will receive wage increases, retroactive to February 1, 1928, ranging from one to three cents an hour.

At the St. Paul (Minn.) and Seattle (Wash.) general offices assistant chief clerks and other clerical supervisory forces and clerks with more than two years of cumulative experience, who have been receiving less than $4 a day, will receive an increase of two cents an hour. An additional increase of one-half cent an hour will be distributed among positions in these classifications under an agreement to be effected with the brotherhood.

In positions on the line, chief clerks and other clerical supervisory forces and clerks with two years experience who have been receiving more than $4 a day will receive an increase of three cents an hour; foremen and sub-foremen, receiving and delivery clerks at freight stations, clerks in baggage rooms, baggage and parcel room employees, freight handlers and truckers and sealers, scalers, freight inspectors, loaders, locaters and coopers at freight stations will receive an increase of two cents an hour, and clerks at stations where no more than two clerks are employed and store department employees receiving less than 48 cents an hour will be given an increase of one cent an hour.

C. N. J. Passenger Head in Service 50 Years

On the occasion of the completion of 50 years of service with the Central of New Jersey, W. C. Hope, passenger traffic manager of that company, was tendered a testimonial dinner on May 1 at New York by 100 officers of the C. N. J. and other railroads. Mr. Hope replied to the congratulatory address of his hosts by reminiscing on the early days of the Central. His grandfather and father were among the pioneer employees of the road, he said. The Hope family, he said, has been represented in the transportation field in New Jersey for the last one hundred years. His father, he said, operated an express line from Elizabethtown to Sommerville in the '40s.

When he went to work for the Central as a clerk in the passenger department, May 1, 1878, he recalled, he received a salary of $20. He became passenger traffic manager of the system on March 1, 1920.

R. B. White, president of the Central, served as toastmaster. Among the speakers were W. G. Besler, chairman of the board; C. H. Stein, assistant to the president; J. W. Meredith, general superintendent; Arthur Hamilton, vice-president; C. E. Miller, general counsel; B. D. Branch, general passenger agent, and J. A. Taylor, comptroller, all of the Jersey Central; James Maybury, Jr.; chief engineer of the Public Utilities Commission of New Jersey; Colonel Walter V. Shipley, general passenger agent, Baltimore & Ohio, and E. D. Osterhout, passenger traffic manager of the Reading.

For the past 17 years, Mr. Hope has been secretary of the American Association of Passenger Traffic Officers.

Rock Island Opens Billings, Okla. to Ponca City Extension

The Chicago, Rock Island & Pacific formally opened its Billings, Okla., to Ponca City extension on April 18 when Princess Elaine White Eagle accompanied by Princesses Cora Royal Moon and Julia Waters, (all daughters of Ponca Indian chiefs) drove a golden spike exemplifying the completion of the line. A special train carrying the president of the railroad, several other officers and people from Billings and intermediate points

Indian Princesses Driving "Golden Spike" on Rock Island's Billings-Ponca City Line

was operated from Billings to Ponca City with the niece of the president of the Wentz Oil Company of Ponca as "acting engineman." The mayor of Ponca City, who is a former clerk on the Chicago, Rock Island & Pacific, also participated in the ceremonies.

Western Railway Club Annual Meeting

The annual meeting and dinner of the Western Railway Club at the Sherman Hotel, Chicago, on May 7, was given over to a discussion of the place of aviation in the general transportation scheme. Addresses were made by W. P. McCracken, Jr., assistant secretary for aeronautics, Department of Commerce, on "Aviation As a Transportation Agency," by T. C. Powell, president of the Chicago & Eastern Illinois, on "Airplanes and Terminals" and by W. G. Black, mechanical assistant to the president of the Erie, president of the club.

The officers who were elected for 1928-1929 are: A. W. Towsley, assistant to vice-president, Chicago, Rock Island & Pacific, president; J. T. St. Clair, engineer car construction, Atchison, Topeka & Santa Fe, first vice-president; R. W. Anderson, superintendent of motive power, Chicago, Milwaukee, St. Paul & Pacific, second vice-president; J. W. Fogg, MacLean-Fogg Lock Nut Company, treasurer; W. J. Dickinson, Chicago, secretary. The members of the board of directors for the ensuing year are: Mr. Black; E. B. Hall, general superintendent of motive power and machinery, Chicago & North Western; C. M. House, superintendent of motive power and equipment, Chicago & Alton; F. F. McCarthy, district superintendent of motive power, New York Central; H. P. Allstrand, assistant superintendent of motive power and machinery, C. & N. W.; L. A. Richardson, general superintendent of motive power, C., R. I. & P.; O. E. Ward, superintendent of motive power, Lines East, Chicago, Burlington & Quincy; L. R. Wink, assistant superintendent of car department, C. &

(*Continued on page 1122*)

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1928

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1927.
Akron, Canton & Youngstown	March	171	$271,459	$199	$282,465	$56,723	$24,455	$12,479	$78,490	$12,920	$185,663	65.7	$96,802	$83,360	$56,168	$53,524
	3 mos.	171	742,498	737	777,256	138,574	78,779	38,458	228,002	41,790	525,882	67.7	251,374	210,757	130,681	136,171
Atchison, Topeka & Santa Fe	March	9,423	11,652,307	2,755,101	15,819,616	2,872,047	3,403,210	377,516	4,926,855	434,032	11,964,944	75.6	3,854,672	2,616,487	2,654,442	3,411,167
	3 mos.	9,423	32,524,357	8,843,247	45,215,994	7,059,805	10,080,164	1,230,043	14,393,722	1,242,016	33,893,203	75.0	11,322,791	7,602,531	7,692,860	10,240,490
Gulf, Colorado & Santa Fe	March	1,944	1,752,717	165,597	2,058,292	470,766	480,305	58,178	725,288	66,312	1,786,804	86.8	271,488	173,435	46,600	424,895
	3 mos.	1,944	5,365,928	538,455	6,279,076	1,402,541	1,465,658	172,268	2,236,315	210,062	5,434,326	86.5	844,750	562,983	142,464	1,551,932
Panhandle & Santa Fe	March	964	821,801	91,258	996,998	358,322	222,107	10,975	304,459	26,277	911,883	91.5	85,115	48,845	—33,905	192,427
	3 mos.	964	2,388,627	309,132	2,899,856	699,513	705,637	34,282	936,301	79,681	2,438,953	84.1	460,903	355,885	101,269	744,534
Atlanta & West Point	March	93	186,366	54,987	277,836	27,959	40,657	12,577	94,792	13,768	193,767	69.7	84,069	69,683	51,741	39,445
	3 mos.	93	502,705	177,488	778,025	84,681	126,821	38,927	269,191	38,789	572,287	73.6	205,738	157,208	110,849	95,003
Western of Alabama	March	133	225,693	53,631	309,103	30,858	49,001	12,483	85,068	14,203	195,029	63.1	114,074	93,598	99,162	44,403
	3 mos.	133	575,588	171,832	827,374	89,187	150,552	38,718	238,675	42,664	570,201	68.9	257,173	193,562	244,888	125,653
Atlanta, Birmingham & Coast	March	639	356,458	27,371	430,109	95,760	82,536	28,324	166,720	18,501	403,679	93.9	26,430	11,382	—9,198	12,194
	3 mos.	639	1,001,660	78,374	1,202,699	275,885	243,193	88,972	488,874	55,712	1,186,642	98.7	16,057	—29,127	—77,891	—43,484
Atlantic Coast Line	March	5,104	5,362,554	1,684,160	7,747,321	1,039,619	1,343,056	186,068	2,448,548	186,935	5,284,985	68.2	2,462,336	1,908,569	1,842,270	2,028,289
	3 mos.	5,104	14,281,029	5,002,439	20,988,979	2,988,127	3,968,954	593,910	7,113,736	554,933	15,460,069	73.7	5,528,910	4,072,868	3,830,317	5,162,461
Charleston & Western Carolina	March	342	306,803	11,955	328,569	81,470	46,977	6,973	108,377	7,209	250,992	76.4	77,577	56,032	50,474	50,910
	3 mos.	342	792,061	36,270	854,703	209,773	137,066	22,350	315,116	21,049	705,334	82.5	149,369	84,709	80,209	103,971
Baltimore & Ohio	March	5,637	15,857,521	1,781,000	18,851,283	2,375,560	4,179,256	537,826	6,924,050	687,132	14,868,463	78.9	3,982,820	3,177,144	2,891,174	4,255,630
	3 mos.	5,637	44,371,447	5,509,529	53,218,161	7,126,265	12,087,229	1,481,205	20,359,389	2,036,197	43,600,779	81.9	9,617,382	6,965,091	6,242,366	9,328,932
Baltimore & Ohio Chicago Term.	March	87	.....	.....	378,448	43,480	40,769	2,448	187,311	17,411	297,238	78.5	81,210	25,734	131,651	110,616
	3 mos.	87	.....	.....	1,031,399	94,526	116,923	7,405	561,573	48,428	847,369	82.2	184,030	19,117	288,333	244,384
Staten Island Rapid Transit	March	23	103,441	112,190	236,215	34,385	21,064	2,272	106,966	17,499	182,186	77.1	54,029	35,433	—1,155	1,559
	3 mos.	23	306,517	331,146	697,768	89,219	62,708	6,632	317,511	48,262	524,332	75.1	173,436	118,784	8,564	—13,607
Bangor & Aroostook	March	613	728,601	90,269	845,588	109,197	123,757	5,606	185,067	26,140	452,705	53.5	392,883	314,971	320,385	399,042
	3 mos.	613	1,966,165	241,595	2,279,948	333,202	350,298	15,669	547,965	74,705	1,330,552	58.4	949,396	753,511	778,064	942,729
Belt Ry. Co. of Chicago	March	32	.....	.....	712,247	42,617	74,913	4,124	319,505	15,302	456,461	64.1	255,786	208,070	136,554	137,780
	3 mos.	32	.....	.....	1,930,651	132,208	222,234	11,418	964,818	36,456	1,367,134	70.8	563,517	420,365	426,017	416,141
Bessemer & Lake Erie	March	224	679,930	11,425	708,863	80,635	309,815	14,202	259,099	33,782	700,715	98.9	8,148	—15,602	1,254	250,256
	3 mos.	226	1,857,415	32,829	1,935,952	208,682	903,895	43,075	738,502	103,911	2,007,952	103.7	—72,000	—143,206	—82,574	584,638
Bingham & Garfield	March	33	37,070	.....	38,185	7,655	5,384	1,329	11,939	4,296	30,706	80.4	7,479	—110	16,604	20,693
	3 mos.	33	112,732	.....	116,086	21,239	22,082	4,267	33,241	12,518	93,738	80.7	22,348	—641	50,707	56,348
Boston & Maine	March	2,112	4,260,286	1,332,651	6,326,045	689,034	1,171,072	74,232	2,407,421	324,113	4,680,593	74.0	1,645,452	1,356,893	1,190,816	1,133,691
	3 mos.	2,112	11,887,528	4,159,293	18,080,286	2,012,506	3,432,414	220,345	7,136,464	743,202	13,585,273	75.1	4,495,013	3,600,480	3,039,201	2,538,775
Brooklyn Eastern Dist. Terminal	March	9	134,403	.....	138,647	14,022	12,268	133	46,968	7,263	80,654	58.2	57,993	47,530	47,530	48,504
	3 mos.	9	361,573	.....	373,756	25,541	32,173	1,133	133,645	25,642	218,134	58.4	155,622	129,485	129,485	124,182
Buffalo & Susquehanna	March	253	130,317	1,462	137,921	27,526	48,726	1,811	44,580	7,495	130,138	94.4	7,783	5,783	17,714	25,266
	3 mos.	253	385,245	4,532	408,139	80,515	141,992	5,340	135,420	23,136	386,403	94.7	21,736	15,736	53,903	64,646
Buffalo, Rochester & Pittsburgh	March	601	1,331,655	73,950	1,449,876	137,092	366,528	30,285	562,747	43,780	1,142,511	78.8	307,365	277,294	264,570	270,610
	3 mos.	601	3,846,231	236,881	4,200,569	3,867,724	1,088,531	86,382	1,665,401	124,763	3,359,057	80.0	841,512	751,419	747,135	767,869
Canadian Pacific Lines in Maine	March	233	288,393	44,903	348,557	31,671	61,045	5,656	136,576	4,003	238,951	68.6	109,606	95,606	66,031	81,339
	3 mos.	233	784,038	104,593	932,930	76,542	156,077	16,412	380,832	11,484	641,347	68.7	291,583	249,583	171,578	187,133
Canadian Pacific Lines in Vermont	March	85	115,482	37,125	172,767	23,365	46,361	1,656	107,605	1,887	180,874	104.6	—8,107	—12,957	—47,682	8,402
	3 mos.	85	333,948	111,324	498,922	57,496	123,936	4,834	321,157	5,593	513,016	103.0	—14,094	—28,644	—128,169	11,640
Central of Georgia	March	1,911	1,901,549	349,263	2,491,312	270,889	384,988	70,780	883,942	95,522	1,719,502	69.0	771,810	610,993	552,011	541,086
	3 mos.	1,911	4,862,231	1,052,641	6,553,428	794,449	1,111,853	220,006	2,484,232	284,842	4,939,174	75.4	1,614,254	1,210,612	1,133,898	1,362,524
Central New Jersey	March	690	3,731,818	616,725	4,664,875	429,019	1,008,661	45,195	1,840,058	121,801	3,469,740	74.4	1,195,135	791,425	673,708	600,048
	3 mos	690	10,165,443	1,918,027	12,923,940	1,172,849	2,942,429	136,618	5,307,073	431,257	10,062,649	77.9	2,861,291	2,127,021	1,715,479	1,194,752
Central Vermont	March	392	429,616	30,685	530,431	252,239	103,631	12,946	262,646	21,785	653,247	123.2	—122,816	—116,143	—131,788	77,492
	3 mos.	375	896,096	85,548	1,118,502	967,565	292,954	39,571	674,275	71,071	2,045,436	182.9	—926,934	—958,283	—999,187	169,699
Chesapeake & Ohio	March	2,716	9,320,359	563,210	10,279,167	1,544,024	2,479,070	139,991	2,814,444	285,058	7,290,647	70.9	2,988,520	2,318,130	2,517,673	3,323,057
	3 mos.	2,716	26,955,147	1,698,609	29,772,362	4,495,441	7,328,868	402,628	8,427,609	854,893	21,593,132	72.5	8,179,230	6,169,655	6,727,569	8,837,478
Chicago & Alton	March	1,028	1,823,030	444,653	2,490,689	230,320	572,758	81,331	916,839	84,029	1,897,775	76.2	592,914	487,331	328,392	406,841
	3 mos.	1,028	4,897,681	1,401,739	6,931,314	656,960	1,671,156	235,071	2,707,616	232,115	5,556,222	80.2	1,375,092	1,058,084	495,177	987,357
Chicago & Eastern Illinois	March	945	1,753,950	264,182	2,191,940	251,134	451,331	83,929	856,760	59,504	1,719,067	78.4	472,873	357,113	221,608	275,552
	3 mos.	945	4,891,071	866,712	6,232,014	723,916	1,372,808	249,674	2,549,687	201,482	5,137,675	82.4	1,094,339	747,989	343,737	716,757
Chicago & Illinois Midland	March	133	273,363	7,968	288,932	32,701	45,268	15,124	71,093	15,727	179,665	62.2	109,267	101,832	99,967	51,818
	3 mos.	133	686,956	30,099	734,845	64,305	131,084	42,233	202,445	45,888	485,571	66.1	249,274	226,969	229,150	180,111
Chicago & Northwestern	March	8,463	9,088,076	1,729,115	12,082,737	1,706,330	2,482,344	214,569	4,851,521	372,491	9,682,501	80.1	8,400,236	1,621,500	1,432,362	1,288,525
	3 mos.	8,463	24,617,086	5,376,833	33,478,839	4,015,697	7,129,689	611,243	14,125,642	1,090,271	27,114,563	81.0	6,364,276	4,032,911	3,595,322	2,926,730
Chicago, Burlington & Quincy	March	9,377	11,303,655	1,361,547	13,865,936	1,501,326	2,067,040	277,455	4,659,223	370,495	8,900,833	64.2	4,965,103	3,747,022	3,373,848	3,103,509
	3 mos.	9,377	31,091,422	4,506,662	39,031,578	3,842,674	6,149,167	787,235	13,504,024	1,100,278	25,620,459	65.6	13,411,119	10,323,090	9,273,135	7,294,894

Revenues and Expenses of Railways

	3 mos.	9,377	31,091,422	4,506,662	39,031,578	3,842,674	6,149,167	787,235	13,504,024	1,100,278	25,620,459	65.6	13,411,119	10,323,090	9,273,135	7,294,894

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1928—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1927.
Chicago Great Western	March	1,495	$1,681,407	$231,538	$2,071,044	$177,830	$387,727	$86,201	$844,037	$57,437	$1,564,634	75.5	$506,410	$427,396	$267,477	$242,572
	3 mos.	1,495	4,539,209	735,737	5,726,658	529,434	1,131,601	243,297	2,498,411	166,318	4,603,075	80.4	1,123,583	871,407	401,635	415,771
Chicago, Indianapolis & Louisville	March	647	1,340,035	160,857	1,650,118	132,082	323,446	40,420	610,534	36,521	1,154,719	70.0	495,397	410,556	268,890	281,273
	3 mos.	647	3,567,205	511,174	4,487,319	375,820	962,304	117,362	1,738,235	110,554	3,344,797	74.5	1,142,522	917,105	529,134	583,953
Chicago, Milwaukee, St. P. & Pac.	March	11,250	11,635,778	1,379,463	14,231,148	1,443,213	2,583,450	254,115	4,894,963	353,866	9,605,392	67.50	4,625,756	3,800,690	3,367,286	1,311,386
	3 mos.	11,252	31,194,703	4,263,736	38,894,359	3,813,848	7,638,513	754,103	14,670,391	1,039,838	28,157,791	72.4	10,736,568	8,409,125	7,138,668	2,784,385
Chicago River & Indiana	March	20	.....	.....	621,614	51,363	67,994	732	225,302	14,993	360,384	58.0	261,230	208,990	312,549	300,204
	3 mos.	20	.....	.....	1,741,226	149,546	203,095	2,355	653,788	48,323	1,057,107	60.7	684,119	535,548	835,765	810,466
Chicago, Rock Island & Pacific	March	7,569	8,716,683	1,502,506	11,179,600	1,398,603	2,156,264	237,892	3,978,885	347,328	8,120,145	72.6	3,059,455	2,418,005	2,035,299	1,918,960
	3 mos.	7,569	23,931,919	4,708,338	31,349,827	3,993,103	6,209,139	709,707	11,774,893	1,024,694	23,635,481	75.4	7,714,346	5,814,339	4,641,756	4,187,702
Chicago, Rock Island & Gulf	March	516	423,511	63,823	531,692	54,446	55,827	19,423	202,209	16,985	345,762	65.0	185,930	157,950	131,685	209,252
	3 mos.	516	1,254,990	205,507	1,578,411	159,587	155,591	57,651	591,522	51,103	990,024	62.7	588,387	508,792	427,524	591,540
Chic., St. Paul, Minn. & Omaha	March	1,746	1,803,168	338,244	2,300,714	272,554	460,885	39,215	964,079	77,722	1,822,679	79.2	478,035	365,427	324,330	266,127
	3 mos.	1,746	5,037,788	1,022,265	6,523,675	806,442	1,317,391	116,229	2,959,058	227,614	5,449,024	83.5	1,074,651	742,596	584,880	488,967
Clinchfield R. R.	March	309	591,838	16,158	621,231	58,288	139,558	22,815	127,774	16,921	364,718	58.7	256,513	181,401	269,287	314,609
	3 mos.	309	1,683,222	53,119	1,772,971	186,290	383,113	68,156	383,268	53,846	1,073,563	60.6	699,408	474,213	713,502	906,882
Colorado & Southern	March	1,049	714,465	86,528	876,522	147,363	193,836	14,467	336,804	42,875	733,875	83.7	142,647	76,383	67,541	73,975
	3 mos.	1,051	2,404,546	261,760	2,889,430	480,451	605,982	42,897	1,056,317	124,808	2,317,101	80.2	572,329	373,180	324,476	305,434
Ft. Worth & Denver City	March	533	683,380	152,862	902,897	187,842	158,923	18,230	276,586	37,520	672,961	74.5	229,936	172,550	173,379	212,751
	3 mos.	533	2,070,142	469,031	2,715,136	447,363	401,904	51,179	829,579	112,847	1,843,695	67.9	871,441	716,283	712,647	863,351
Wichita Valley	March	271	161,819	12,077	182,242	16,867	9,680	3	45,096	1,545	70,228	38.5	112,014	98,160	73,390	81,861
	3 mos.	271	420,186	38,626	482,386	62,658	25,267	53	130,244	4,902	220,066	45.6	262,320	231,785	156,900	232,458
Columbus & Greenville	March	167	123,629	19,369	150,456	40,136	18,587	3,700	51,777	10,918	125,088	83.1	25,368	24,168	12,639	20,179
	3 mos.	167	361,200	59,126	441,840	114,006	53,616	12,636	157,428	38,897	376,552	85.2	65,288	61,666	24,607	26,232
Conemaugh & Black Lick	March	22	62,024	.....	124,658	14,018	30,788	931	81,038	4,030	130,805	104.9	—6,147	—7,147	—5,346	—6,070
	3 mos.	22	161,807	.....	341,752	39,717	84,114	2,817	230,697	10,024	367,369	107.5	—25,617	—28,617	—26,986	—29,309
Delaware & Hudson	March	881	2,559,296	245,054	3,054,723	448,509	849,491	59,393	1,223,320	152,928	2,741,725	89.8	312,998	225,498	197,502	182,035
	3 mos.	881	7,472,150	802,398	8,959,764	1,329,577	2,492,197	159,326	3,618,216	498,862	8,132,761	90.8	827,003	562,774	521,738	658,302
Delaware, Lackawanna & Western	March	998	4,651,819	897,198	6,348,065	670,426	1,157,957	127,912	2,770,099	183,944	4,965,414	78.2	1,382,651	869,164	916,689	753,561
	3 mos.	998	13,420,133	2,791,564	18,379,620	1,875,948	3,420,648	389,449	7,985,986	536,433	14,370,191	78.2	4,009,429	2,476,812	2,574,643	2,056,071
Denver & Rio Grande Western	March	2,547	2,064,321	245,615	2,486,100	483,471	534,721	54,880	737,709	86,719	1,923,963	77.4	562,137	377,067	432,324	375,724
	3 mos.	2,547	6,214,775	734,059	7,443,978	1,292,025	1,558,508	165,489	2,299,113	258,468	5,651,437	75.9	1,792,541	1,237,415	1,418,812	1,399,415
Denver & Salt Lake	March	232	173,952	22,824	211,220	45,027	71,882	1,566	46,073	9,203	173,751	82.3	37,469	30,461	33,718	30,979
	3 mos.	246	856,906	79,733	979,353	142,266	274,110	5,175	226,502	27,140	675,193	68.9	304,160	283,145	286,346	139,148
Detroit & Mackinac	March	315	103,194	13,128	126,463	27,437	24,636	1,759	44,494	5,218	103,537	81.9	22,926	12,981	16,396	15,943
	3 mos.	315	259,986	39,880	325,550	58,751	75,585	5,692	128,039	16,093	284,131	87.3	41,419	11,564	22,731	5,729
Detroit & Toledo Shore Line	March	50	483,556	.....	488,405	33,754	37,212	3,894	112,291	7,271	194,422	39.8	293,983	264,554	176,652	167,535
	3 mos.	50	1,297,900	.....	1,311,448	79,847	107,370	10,670	318,617	21,728	538,232	41.0	773,216	683,417	427,508	503,663
Detroit Terminal	March	19	.....	.....	183,316	13,035	15,512	.....	82,002	4,128	114,677	62.6	68,639	50,191	52,525	53,866
	3 mos.	19	.....	.....	483,648	46,289	45,547	25	230,835	11,327	334,023	69.1	149,625	101,871	105,205	99,942
Detroit, Toledo & Ironton	March	495	813,891	3,687	827,239	83,129	179,681	12,685	268,428	30,135	574,058	69.4	253,181	199,935	143,791	160,585
	3 mos.	495	2,198,263	10,907	2,241,499	281,614	482,035	37,794	778,798	87,550	1,667,257	74.4	574,242	431,564	256,181	429,694
Duluth & Iron Range	March	275	74,002	5,846	92,664	55,773	110,420	2,190	90,902	20,588	279,873	302.0	—187,209	—206,717	—201,301	—200,883
	3 mos.	275	243,818	17,002	297,990	164,595	305,619	5,179	278,158	60,707	814,258	273.3	—516,268	—575,889	—575,829	—599,199
Duluth, Missabe & Northern	March	307	82,758	5,943	104,449	89,837	167,229	3,271	133,550	21,206	415,093	397.4	—310,644	—388,107	—391,438	—516,032
	3 mos.	307	230,376	16,683	293,465	239,555	478,499	9,481	395,223	67,805	1,190,563	405.7	—897,098	—1,128,902	—1,137,783	—1,445,461
Duluth, Winnipeg & Pacific	March	178	221,765	9,424	239,288	23,997	55,919	4,559	76,607	10,157	172,233	72.0	67,055	54,725	34,837	42,356
	3 mos.	178	663,401	35,509	715,586	74,169	150,948	13,630	246,549	25,566	513,811	71.8	201,775	165,604	139,339	143,706
Elgin, Joliet & Eastern	March	460	2,228,300	.....	2,436,389	177,297	448,999	15,210	794,765	51,982	1,486,218	61.0	950,171	846,801	649,296	755,705
	3 mos.	460	5,780,525	23	6,358,323	497,388	1,256,384	44,652	2,264,765	178,737	4,237,021	66.6	2,121,302	1,811,585	1,298,604	1,779,823
Erie	March	2,047	7,435,995	782,417	8,944,855	976,919	2,062,567	161,446	3,572,172	283,056	7,102,394	79.4	1,842,461	1,478,683	1,420,944	888,440
	3 mos.	2,047	20,482,516	2,442,800	24,913,613	2,747,870	6,044,159	502,650	10,490,739	865,204	20,781,925	83.4	4,131,688	3,026,107	2,781,769	1,789,161
Chicago & Erie	March	269	1,124,151	39,890	1,263,166	137,752	171,967	20,263	373,224	40,483	743,463	58.9	519,703	467,959	194,519	126,059
	3 mos.	269	3,090,674	117,853	3,454,657	442,330	479,165	74,241	1,121,099	122,797	2,238,202	64.8	1,216,455	1,061,357	197,078	130,932
New Jersey & New York	March	45	31,520	90,182	127,212	15,055	26,017	1,685	74,837	3,402	120,994	95.1	6,218	2,269	—29,175	—38,095
	3 mos.	45	82,582	276,272	372,464	45,198	78,522	4,962	218,536	10,342	357,503	96.0	14,961	3,208	—93,341	—111,684
N. Y., Susquehanna & Western	March	134	310,107	43,105	389,720	50,870	63,030	4,986	200,257	11,347	330,475	84.8	59,245	29,895	—090	—8,117
	3 mos.	134	881,110	130,945	1,137,275	149,571	186,789	15,223	599,712	33,525	984,719	86.6	152,556	64,452	—30,105	—55,001
Evansville, Indian'is & Terre Haute	March	146	173,207	4,134	183,056	22,748	24,298	1,974	67,902	5,906	122,828	67.1	60,228	55,572	14,031	64,229
	3 mos.	146	492,018	12,940	521,020	60,175	71,633	6,956	188,745	17,436	344,861	66.2	176,159	159,267	41,171	134,272
Florida East Coast	March	858	739,909	703,834	1,686,690	217,397	243,355	38,364	494,465	49,933	1,097,014	65.0	589,676	441,432	381,309	391,742
	3 mos.	858	2,189,703	2,039,686	4,795,965	625,224	660,514	138,895	1,427,619	146,617	3,116,764	65.0	1,679,201	1,233,770	1,025,436	1,020,274

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1928—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1927.
Fort Smith & Western	March	249	$109,416	$8,602	$124,138	$23,367	$27,953	$6,235	$46,215	$6,883	$109,575	88.3	$14,563	$11,468	—$2,848	$15,631
	3 mos.	249	313,818	29,306	363,728	65,134	83,312	17,527	134,641	20,535	319,033	87.7	44,695	33,081	142	35,498
Galveston Wharf	March	13	.....	.....	146,252	47,947	4,269	3,309	27,365	4,264	95,239	65.1	51,013	34,013	34,217	60,033
	3 mos.	13	.....	.....	414,349	140,294	12,154	8,560	82,117	13,573	283,353	68.4	130,966	79,996	80,298	181,489
Georgia R. R.	March	328	389,804	56,359	482,648	52,018	87,425	23,025	200,916	22,851	386,701	80.1	95,947	87,139	96,394	111,637
	3 mos.	328	1,023,176	168,537	1,283,690	135,552	248,632	72,500	583,180	70,823	1,108,477	86.4	175,213	149,012	186,025	245,758
Georgia & Florida	March	445	161,176	16,554	186,458	26,671	22,296	10,165	61,742	8,412	129,225	69.3	57,233	48,233	44,721	39,337
	3 mos.	445	362,106	39,933	425,174	60,685	59,179	28,668	163,384	24,845	336,942	79.2	88,232	63,214	63,793	79,956
Grand Trunk Western	March	345	1,654,094	153,986	1,874,320	144,609	422,009	41,144	651,741	68,114	1,342,480	71.6	531,840	449,087	335,849	281,622
	3 mos.	345	4,346,958	473,352	5,056,670	383,918	1,182,187	122,784	1,838,414	200,209	3,773,398	74.6	1,283,272	1,035,708	816,534	740,375
Atlantic & St. Lawrence	March	166	198,578	31,286	250,118	37,371	44,248	5,582	188,085	8,843	285,581	114.1	—35,463	—50,363	—118,849	—49,546
	3 mos.	166	607,835	96,022	764,118	99,754	138,510	16,611	486,639	26,751	772,871	101.0	—8,753	—51,503	—264,135	—129,293
Chic., Det. & Canada Gr. Tr. Jct.	March	59	298,288	2,710	335,089	14,438	17,302	4,577	98,625	4,379	139,308	41.6	195,781	185,531	158,205	152,184
	3 mos.	59	798,428	4,350	906,314	46,862	51,023	13,831	285,993	13,364	411,044	45.4	495,270	464,211	361,934	432,184
Detroit, Grand Haven & Mil.	March	192	706,602	27,916	789,350	78,544	68,215	12,948	283,959	19,780	463,988	58.8	325,362	320,564	230,135	173,915
	3 mos.	192	1,842,377	79,397	2,059,768	174,606	195,298	38,900	809,143	59,033	1,277,500	62.0	782,268	755,661	407,663	342,312
Great Northern	March	8,163	6,966,308	875,097	8,602,668	865,995	1,654,933	295,521	3,126,148	292,868	6,315,969	73.4	2,286,699	1,576,598	1,507,229	1,123,741
	3 mos.	8,163	18,127,754	2,740,236	22,998,174	2,375,079	4,737,138	693,977	9,020,278	761,540	17,820,177	77.5	5,177,997	3,143,134	2,982,682	1,998,600
Green Bay & Western	March	234	139,649	7,000	154,920	20,480	20,004	5,346	59,241	2,390	107,461	69.3	47,459	39,459	33,524	25,908
	3 mos.	234	373,310	19,013	412,967	53,739	55,226	15,190	168,516	8,551	301,222	72.9	111,745	87,745	72,862	60,845
Gulf & Ship Island	March	307	297,084	47,230	370,782	54,771	57,599	4,890	112,530	8,406	242,429	65.4	128,353	102,042	85,018	—5,642
	3 mos.	307	757,931	132,291	966,608	176,839	161,768	16,007	326,873	25,307	718,408	74.3	248,200	168,718	125,068	—64,410
Gulf, Mobile & Northern	March	733	619,228	31,192	675,176	114,246	96,834	32,726	199,048	31,338	474,437	70.27	200,739	162,007	117,375	104,312
	3 mos.	733	1,646,968	94,283	1,809,978	301,194	281,850	96,719	576,625	85,913	1,342,967	74.20	467,011	376,241	261,046	289,594
Hocking Valley	March	348	1,214,734	57,138	1,354,857	173,267	336,304	17,595	427,125	44,556	998,833	73.7	356,024	231,047	187,445	467,735
	3 mos.	348	3,452,567	180,295	3,873,804	531,119	963,536	52,022	1,286,660	140,197	2,973,440	76.8	900,364	525,359	534,642	990,365
Illinois Central	March	4,915	10,995,150	1,855,975	13,824,275	1,447,099	3,006,322	241,199	4,812,841	369,061	9,945,751	71.9	3,878,524	2,831,788	2,811,747	2,657,335
	3 mos.	4,915	29,955,891	5,905,319	38,336,490	4,134,194	8,616,637	815,012	14,076,616	1,072,418	28,961,403	75.5	9,375,087	6,642,583	6,782,576	6,928,333
Yazoo & Mississippi Valley	March	1,709	1,753,736	261,012	2,132,876	374,875	473,694	45,966	858,552	67,201	1,829,782	85.8	303,094	137,308	63,003	194,295
	3 mos.	1,709	5,162,023	864,132	6,405,732	1,117,908	1,254,779	136,924	2,574,883	193,904	5,295,059	82.7	1,110,673	613,624	400,973	674,103
Illinois Central System	March	6,624	12,761,025	2,120,477	15,972,783	1,821,974	3,487,910	287,165	5,685,364	436,409	11,797,545	73.9	4,175,238	2,958,301	2,872,887	2,858,114
	3 mos.	6,624	35,149,881	6,781,015	44,785,761	5,252,102	9,891,127	951,936	16,692,230	1,266,657	34,317,239	76.6	10,468,522	7,224,853	7,185,436	7,625,636
Kansas City, Mexico & Orient	March	272	247,194	6,205	261,343	86,484	46,936	9,404	87,725	9,053	239,586	91.7	21,757	17,756	29,721	13,727
	3 mos.	272	711,000	16,444	750,581	197,704	151,220	26,578	250,476	28,089	653,345	87.0	97,236	85,170	126,296	4,697
Kans. City, Mex. & Orient of Tex.	March	465	449,777	16,605	480,778	159,762	81,796	9,975	150,013	10,066	411,262	85.5	69,516	62,381	3,200	2,397
	3 mos.	465	1,384,748	48,150	1,473,419	436,093	260,805	28,455	447,385	31,994	1,205,187	81.8	268,232	246,617	63,199	43,411
Kansas City Southern	March	784	1,309,642	75,049	1,551,051	173,361	272,972	56,142	470,574	82,273	1,058,481	68.2	492,570	378,295	317,878	349,921
	3 mos.	784	3,763,365	237,411	4,447,584	474,034	771,509	165,200	1,420,490	239,270	3,072,381	69.1	1,375,203	1,032,465	857,753	946,288
Texarkana & Ft. Smith	March	81	195,442	7,436	226,228	14,896	19,901	5,531	63,489	10,644	116,175	51.4	110,053	97,917	71,315	72,786
	3 mos.	81	572,677	22,372	651,589	55,004	59,365	18,192	192,161	30,283	359,271	55.1	292,318	255,844	173,819	157,604
Kansas, Oklahoma & Gulf	March	326	239,836	2,855	247,270	71,663	27,052	12,080	66,114	10,929	179,265	72.5	68,005	56,695	44,337	—108,913
	3 mos.	326	720,432	9,816	745,143	180,899	70,441	34,714	198,624	30,103	492,761	66.1	252,382	219,859	182,397	—198,706
Lake Superior & Ishpeming	March	160	67,253	2,778	73,850	25,995	28,596	525	36,119	4,771	96,006	130.0	—22,156	—34,554	—38,632	—42,437
	3 mos.	160	200,231	7,648	219,327	77,903	83,111	1,648	105,253	16,440	284,355	129.6	—65,028	—102,090	—114,855	—125,959
Lake Terminal	March	13	.....	.....	78,674	19,894	22,251	.....	48,163	1,894	92,202	117.2	—13,528	—18,053	—16,025	—14,504
	3 mos.	13	.....	.....	225,740	48,099	63,223	.....	145,738	6,110	263,170	116.6	—37,430	—49,256	—38,710	—11,064
Lehigh & Hudson River	March	96	205,516	1,244	219,920	18,280	26,101	2,616	85,715	9,975	142,687	64.9	77,233	61,794	40,306	53,542
	3 mos.	96	618,775	4,440	658,662	62,896	108,478	7,445	261,914	29,372	470,105	71.4	188,557	148,249	83,601	129,596
Lehigh & New England	March	216	339,073	1,680	347,401	44,086	81,045	5,372	152,488	18,574	301,707	86.8	45,694	38,153	36,821	87,784
	3 mos.	216	1,042,920	5,150	1,066,515	118,072	258,040	15,880	479,397	54,788	926,133	86.8	140,382	116,618	118,065	233,037
Lehigh Valley	March	1,363	4,492,894	501,689	5,424,920	501,907	1,157,617	136,301	2,434,951	139,429	4,400,393	81.1	1,024,527	761,574	621,339	616,114
	3 mos.	1,363	12,791,364	1,582,206	15,556,181	1,747,512	3,766,831	410,627	7,325,173	420,558	13,764,547	88.5	1,791,634	1,158,918	700,274	1,261,526
Louisiana & Arkansas	March	302	306,381	9,333	322,340	45,496	55,878	13,211	80,873	9,486	204,657	63.5	117,683	85,031	70,752	33,977
	3 mos.	302	866,151	29,021	915,319	131,705	163,354	35,360	247,413	30,471	606,511	66.3	308,808	215,841	175,802	95,311
Louisiana Ry. & Nav. Co.	March	334	260,917	8,507	283,766	54,979	40,674	12,788	111,057	11,078	228,389	80.5	55,377	31,744	2,555	—15,939
	3 mos.	334	758,094	27,281	819,922	171,362	111,847	38,170	334,553	33,150	683,430	83.4	136,492	66,788	—22,931	—56,924
Louisiana Ry. & Nav. Co. of Tex.	March	206	79,249	3,284	86,469	23,940	16,567	3,075	38,286	5,796	87,664	101.4	—1,195	—5,196	—18,742	—12,038
	3 mos.	206	241,552	10,531	263,997	66,027	39,297	9,115	120,297	16,832	251,568	95.3	12,429	386	—39,912	—40,598
Louisville & Nashville	March	5,077	9,837,638	1,414,179	12,031,952	1,730,623	2,755,941	228,839	4,167,202	347,864	9,269,396	77.0	2,762,556	2,135,154	2,148,692	1,891,800
	3 mos.	5,077	27,662,300	4,478,348	34,208,213	4,959,445	7,947,626	809,890	12,329,936	1,014,388	27,211,732	79.5	6,996,481	5,202,148	5,197,319	5,128,346
Louisville, Henderson & St. Louis	March	199	241,319	40,884	301,043	55,600	45,141	8,386	108,657	12,373	231,769	77.0	69,274	45,896	39,693	75,127
	3 mos.	199	721,170	124,759	898,086	157,538	141,822	25,446	331,960	35,047	696,859	77.6	201,227	131,579	106,330	236,542

Revenues and Expenses of Railways

	3 mos.	5,077	27,662,300	4,478,348	34,208,213	4,959,445	7,947,626	809,890	12,329,936	1,014,388	27,211,732	79.5	6,996,481	5,202,148	5,197,319	5,128,346
Louisville, Henderson & St. Louis	March	199	241,319	40,884	301,043	55,600	45,141	8,386	108,657	12,373	231,769	77.0	69,274	45,896	39,693	75,127
	3 mos.	199	721,170	124,759	898,086	157,538	141,822	25,446	331,960	35,047	696,859	77.6	201,227	131,579	106,330	236,542

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1928—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1927.
Maine Central	March	1,122	$1,289,039	$275,393	$1,708,532	$226,523	$293,858	$14,258	$665,077	$51,186	$1,250,630	73.2	$457,902	$352,917	$310,513	$365,942
	3 mos.	1,122	3,798,626	803,249	4,997,454	650,443	875,141	41,282	2,019,543	153,591	3,739,589	74.8	1,257,865	943,075	789,591	858,538
Midland Valley	March	364	258,878	15,690	281,887	32,987	35,207	7,436	76,856	12,936	164,651	58.4	117,236	100,947	75,728	84,253
	3 mos.	364	752,534	50,817	831,038	94,035	97,316	22,844	230,416	39,653	478,259	57.5	352,779	301,617	220,526	285,268
Minneapolis & St. Louis	March	1,627	1,150,628	80,422	1,294,499	120,171	258,344	35,945	573,317	42,971	1,030,987	79.6	263,512	199,097	133,891	16,278
	3 mos.	1,627	3,037,478	245,778	3,462,282	325,414	735,637	109,703	1,667,648	131,928	2,968,254	85.7	494,028	308,432	119,961	—47,527
Minneapolis, St. P. & S. S. Marie	March	4,385	3,052,381	371,892	3,701,836	462,322	795,150	77,488	1,506,204	126,244	2,976,128	80.4	725,708	513,463	373,003	268,544
	3 mos.	4,385	8,345,243	1,196,934	10,285,249	1,328,423	2,213,339	225,576	4,439,350	365,157	8,605,552	83.7	1,679,697	1,051,668	686,101	551,278
Duluth, South Shore & Atlantic	March	582	338,494	59,364	428,195	59,325	67,625	8,018	191,532	11,320	342,264	79.9	85,931	55,917	35,621	80,343
	3 mos.	582	966,596	192,168	1,238,032	155,174	205,882	24,988	556,942	32,731	988,910	79.9	249,122	159,108	99,470	94,232
Spokane International	March	165	77,514	12,388	96,281	15,705	9,950	3,761	32,107	6,801	69,911	72.6	26,370	20,850	13,159	18,628
	3 mos.	165	224,544	32,235	275,923	49,229	25,445	10,468	98,750	20,066	207,737	75.3	68,186	51,675	30,972	44,885
Mississippi Central	March	161	123,779	7,150	135,237	18,845	22,434	9,187	37,598	8,307	96,360	71.3	38,877	30,404	28,252	40,375
	3 mos.	161	364,502	22,283	400,039	50,834	66,484	27,135	108,696	24,329	277,467	69.3	122,572	96,595	89,247	101,342
Missouri & North Arkansas	March	364	124,608	10,186	143,663	29,892	21,053	9,558	55,958	7,892	124,353	85.5	19,810	16,920	4,252	20,234
	3 mos.	364	348,895	33,232	405,439	92,054	74,355	30,976	177,948	24,981	399,934	98.6	5,505	—1,601	—37,618	28,725
* Missouri-Kansas-Texas System	March	3,188	3,478,962	531,468	4,365,627	491,507	799,980	110,401	1,351,357	168,938	2,948,282	67.53	1,417,345	1,147,345	989,074	1,103,006
	3 mos.	3,188	10,043,715	1,696,898	12,744,744	1,453,997	2,464,565	340,101	4,129,209	490,843	8,957,215	70.28	3,787,529	3,008,141	2,548,459	3,105,717
Missouri Pacific	March	7,396	9,110,042	1,095,137	11,042,137	1,818,669	2,175,016	280,567	3,841,596	373,305	8,474,286	76.8	2,567,851	2,099,066	1,673,791	1,822,716
	3 mos.	7,396	25,425,780	3,437,917	31,266,411	4,345,258	6,220,108	868,403	11,493,180	1,120,333	23,984,383	76.7	7,282,028	5,909,880	4,693,534	4,925,179
Gulf Coast Lines	March	1,026	1,313,047	143,422	1,526,681	221,626	219,374	38,449	452,196	59,308	987,302	64.67	539,379	493,613	369,447	305,298
	3 mos.	1,014	3,400,211	441,816	4,045,570	679,382	632,736	118,338	1,256,353	172,204	2,843,664	70.29	1,201,906	1,052,553	764,384	804,872
International-Great Northern	March	1,159	1,185,209	170,352	1,488,476	228,012	257,092	32,679	649,904	64,117	1,232,672	82.81	255,804	213,378	119,638	152,705
	3 mos.	1,159	3,355,264	549,640	4,273,641	702,020	770,127	105,346	1,865,789	202,782	3,644,436	85.28	629,205	503,781	274,159	426,813
San Antonio, Uvalde & Gulf	March	318	202,050	17,489	232,151	42,397	19,801	5,291	56,885	7,596	133,119	57.3	99,032	95,298	59,372	32,275
	3 mos.	318	455,434	56,097	549,280	110,060	62,897	15,797	152,675	22,332	366,123	66.7	183,157	171,977	85,349	60,252
Texas & Pacific	March	2,014	3,526,406	471,189	4,248,294	610,938	629,305	78,849	1,388,865	108,570	2,801,400	65.9	1,446,894	1,267,736	954,772	629,706
	3 mos.	2,014	9,473,581	1,458,540	11,626,050	1,657,054	1,941,694	226,441	3,950,806	318,337	8,099,752	69.7	3,526,298	3,029,934	2,182,875	1,444,797
Mobile & Ohio	March	1,161	1,395,150	87,630	1,573,385	218,344	292,624	56,103	568,185	51,975	1,184,102	75.3	389,283	306,029	244,347	364,873
	3 mos.	1,161	3,780,000	282,760	4,300,009	624,198	819,091	171,632	1,610,945	146,565	3,364,986	78.3	935,023	685,155	516,630	663,826
Monongahela	March	171	565,783	17,638	588,683	85,000	82,000	1,008	155,517	11,193	334,668	56.9	254,015	232,424	138,769	247,757
	3 mos.	171	1,664,922	56,264	1,736,994	255,000	246,000	3,133	473,737	31,649	1,009,354	58.1	727,640	667,541	384,835	642,297
Monongahela Connecting	March	7	.....	.....	155,059	15,569	30,622	375	71,554	3,414	121,534	78.4	33,525	27,647	25,471	49,264
	3 mos.	7	.....	.....	449,363	47,348	93,220	1,164	215,440	10,037	367,209	81.7	82,154	62,937	62,203	104,355
Montour	March	56	116,757	.....	117,406	11,456	37,037	1,217	32,347	6,979	89,036	75.8	28,370	26,870	51,222	54,069
	3 mos.	56	349,050	5	350,633	32,423	112,064	3,631	97,725	20,542	266,385	76.0	84,248	79,748	142,845	148,214
Nashville, Chatt. & St. Louis	March	1,259	1,615,996	277,625	2,069,891	273,551	418,993	85,645	703,018	81,790	1,567,463	75.7	502,428	427,084	434,082	403,936
	3 mos.	1,259	4,182,558	872,634	5,533,584	772,245	1,266,495	277,963	2,049,257	236,859	4,629,058	83.7	904,526	678,697	713,411	858,274
Nevada Northern	March	165	63,248	5,344	76,921	11,698	13,455	934	14,507	4,535	45,286	58.9	31,635	21,329	21,101	33,620
	3 mos.	165	184,348	15,906	222,475	36,319	32,867	2,877	44,350	13,242	130,265	58.6	92,210	60,484	61,914	105,161
Newburgh & South Shore	March	6	.....	.....	170,341	9,914	43,462	.....	69,400	6,584	129,360	75.9	40,981	27,627	31,712	18,247
	3 mos.	6	.....	.....	418,756	32,788	120,599	.....	188,240	15,153	356,780	85.2	61,976	24,680	47,707	38,805
New Orleans Great Northern	March	276	268,754	18,673	296,106	41,787	48,538	12,773	86,631	11,377	201,420	68.0	94,686	77,399	59,227	61,006
	3 mos.	276	772,386	56,823	854,948	109,685	135,559	39,436	254,907	34,047	574,436	67.2	280,512	225,071	170,305	159,580
New Orleans Terminal	March	20	1,215	.....	136,889	25,321	9,692	.....	62,663	1,844	99,520	72.7	37,369	26,362	20,971	37,524
	3 mos.	20	5,064	.....	408,731	83,135	25,324	.....	171,123	5,465	285,047	69.7	123,684	90,622	73,872	91,672
New York Central	March	6,906	20,118,204	7,135,590	31,172,801	3,500,270	7,093,028	458,981	11,400,949	1,163,125	24,062,108	77.2	7,110,693	4,930,099	4,682,081	5,132,926
	3 mos.	6,906	54,809,163	22,292,946	88,138,494	10,404,253	19,431,007	1,327,348	33,120,312	3,474,205	69,138,156	78.4	19,000,338	12,732,707	11,951,564	12,878,266
Cincinnati Northern	March	244	373,118	4,212	383,929	39,840	74,438	5,963	123,997	9,946	254,173	66.2	129,756	101,749	66,047	90,148
	3 mos.	244	1,001,772	13,685	1,032,518	112,690	214,403	18,936	348,377	28,468	722,796	70.0	309,722	240,183	125,526	208,086
Cleve., Cinn., Chi. & St. Louis	March	2,396	5,860,024	1,130,166	7,627,499	695,299	1,546,264	137,296	2,906,613	272,853	5,639,283	73.9	1,988,216	1,520,924	1,307,369	1,835,738
	3 mos.	2,396	16,333,554	3,516,746	21,581,994	2,006,982	4,652,926	450,287	8,424,090	804,199	16,579,713	76.8	5,002,281	3,722,209	3,201,734	3,881,178
Indiana Harbor Belt	March	130	.....	.....	1,118,351	95,614	124,787	4,789	464,100	26,593	734,299	65.7	384,052	319,802	264,586	216,101
	3 mos.	130	.....	.....	3,019,730	301,074	364,465	14,881	1,368,004	79,253	2,173,964	72.0	845,766	690,008	542,824	404,086
Michigan Central	March	1,858	5,826,954	1,392,934	7,953,129	655,574	1,645,285	130,070	2,612,650	213,524	5,346,276	67.2	2,606,853	2,053,521	1,942,423	1,992,612
	3 mos.	1,858	15,440,718	4,477,104	21,927,843	2,010,572	4,293,816	388,978	7,482,353	661,243	15,150,372	69.1	6,777,471	5,270,868	4,930,421	4,858,346
Pittsburgh & Lake Erie	March	231	2,322,944	200,332	2,615,581	324,645	846,397	29,278	842,641	97,976	2,145,095	82.0	470,486	292,460	606,471	663,251
	3 mos.	231	6,441,602	612,822	7,293,902	872,846	2,360,252	87,208	2,496,413	255,456	6,083,627	83.4	1,210,275	717,248	1,627,297	1,882,029
New York, Chicago & St. Louis	March	1,690	4,287,360	120,655	4,543,451	524,785	849,685	141,443	1,634,238	141,971	3,342,804	73.6	1,200,647	938,404	692,771	1,092,853
	3 mos.	1,690	12,283,080	343,620	12,989,638	1,446,974	2,461,191	407,654	4,761,868	440,816	9,558,606	73.6	3,431,032	2,615,878	1,815,781	2,102,395

* Missouri-Kansas-Texas Lines comprising Missouri-Kansas-Texas R. R. Co. and Missouri-Kansas-Texas R. R. Co. of Texas.

Revenues and Expenses of Railways

MONTH OF MARCH AND THREE MONTHS OF CALENDAR YEAR 1928—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1927.
New York, New Haven & Hartford	March	2,157	$6,198,516	$3,687,636	$11,116,902	$1,334,443	$2,192,801	$83,161	$3,836,632	$315,732	$7,946,338	71.5	$3,170,564	$2,551,407	$2,034,947	$2,016,755
	3 mos.	2,161	16,775,561	11,175,318	31,420,615	4,115,865	6,218,449	272,270	11,305,498	942,006	23,390,374	74.4	8,030,241	6,129,401	4,638,004	3,887,482
New York Connecting	March	20	225,085	.....	258,705	19,792	13,134	.....	43,216	1,504	77,646	30.0	181,059	141,559	107,880	133,443
	3 mos.	20	670,611	.....	754,640	66,498	47,374	.....	143,006	5,140	262,018	34.7	492,622	374,122	297,756	303,323
New York, Ontario & Western	March	569	605,611	58,531	828,263	94,810	156,238	19,349	440,956	33,925	754,590	91.1	73,673	23,656	—19,703	—92,284
	3 mos.	569	1,636,677	193,137	2,310,722	295,321	455,120	56,806	1,314,770	106,907	2,256,169	97.6	54,553	—95,713	—224,890	—459,635
Norfolk & Western	March	2,241	7,871,581	440,558	8,636,824	1,296,747	1,642,644	107,489	2,233,209	256,849	5,515,694	63.9	3,121,130	2,319,453	2,525,513	3,046,584
	3 mos.	2,241	21,856,936	1,390,756	24,189,326	3,666,525	4,820,157	334,209	6,636,320	774,455	16,221,647	67.1	7,967,679	5,565,237	6,174,167	7,523,520
Norfolk Southern	March	931	780,081	35,132	863,692	100,958	117,716	28,829	306,465	29,787	583,109	67.5	280,583	231,074	200,145	197,043
	3 mos.	931	2,019,072	112,745	2,263,756	274,577	326,114	84,436	849,125	89,067	1,614,755	71.3	649,001	501,131	421,409	444,798
Northern Pacific	March	6,708	6,616,944	800,627	8,142,610	891,650	1,444,319	211,458	2,694,569	254,271	5,577,262	68.5	2,565,348	1,887,906	2,257,347	1,253,491
	3 mos.	6,708	16,977,512	2,476,064	21,298,724	2,293,863	4,348,647	662,216	7,919,730	766,186	16,229,578	76.2	5,069,146	3,054,232	4,160,531	2,291,055
Northwestern Pacific	March	477	256,149	123,891	427,584	98,774	99,223	10,963	230,315	23,060	462,220	108.1	—34,636	—75,324	—78,978	—35,935
	3 mos.	477	714,599	356,515	1,202,238	284,921	255,981	27,361	673,743	69,525	1,311,253	109.1	—109,015	—231,044	—243,660	—163,768
Pennsylvania R. R.	March	10,513	37,295,966	10,355,706	52,350,843	6,019,585	11,093,177	816,038	19,024,511	1,589,855	39,161,294	74.8	13,189,549	10,277,433	8,983,241	11,078,096
	3 mos.	10,513	102,602,362	32,036,718	147,740,574	17,454,622	32,282,594	2,420,248	56,225,151	4,721,061	115,049,618	77.9	32,690,956	25,671,427	22,007,698	22,354,653
Baltimore, Chesapeake & Atlantic	March	130	67,754	17,017	90,901	10,413	55,510	1,511	75,788	3,553	146,775	161.5	—55,874	—55,874	—56,330	—30,948
	3 mos.	130	173,175	47,694	238,177	31,417	96,012	4,770	213,486	9,281	354,966	149.0	—116,789	—116,795	—118,494	—105,647
Long Island	March	403	878,900	1,820,487	2,879,549	416,215	502,233	29,905	1,371,843	76,890	2,403,654	83.5	475,895	385,756	357,604	—8,325
	3 mos.	403	2,462,210	5,476,416	8,469,124	1,205,100	1,682,100	76,210	4,012,187	239,394	7,230,206	85.4	1,238,918	1,023,663	648,930	200,555
West Jersey & Seashore	March	370	375,781	320,722	733,007	134,763	135,011	15,534	399,847	25,810	711,352	97.0	21,655	—11,836	—42,363	—6,517
	3 mos.	370	1,053,871	960,072	2,115,877	383,444	388,559	42,913	1,193,664	74,590	2,084,205	98.5	31,672	5,516	—76,118	—46,795
Peoria & Pekin Union	March	19	30,877	2,238	190,994	22,873	13,037	4,134	75,508	7,272	122,824	64.3	68,170	51,170	58,228	64,278
	3 mos.	19	73,072	6,238	521,503	44,441	36,341	9,935	221,608	22,773	335,098	64.3	186,405	135,405	188,361	157,785
Pere Marquette	March	2,244	3,219,785	208,384	3,639,696	287,178	802,876	62,224	1,243,054	105,165	2,506,931	68.9	1,132,765	934,504	844,085	1,003,400
	3 mos.	2,244	8,490,278	672,254	9,712,025	761,363	2,242,193	185,611	3,586,257	336,291	7,131,274	73.4	2,580,751	1,987,856	1,796,906	2,121,325
Pittsburgh & Shawmut	March	102	160,904	6,633	169,224	17,223	38,149	1,587	46,267	6,260	109,486	64.7	59,738	58,364	51,166	41,928
	3 mos.	102	503,936	18,498	527,087	52,534	110,655	5,371	145,078	19,198	332,836	63.1	194,251	190,507	165,589	99,220
Pittsburgh & West Virginia	March	92	323,005	5,962	361,722	21,605	64,061	16,065	69,467	17,700	198,566	54.9	163,156	115,677	172,445	264,155
	3 mos.	92	898,559	17,845	1,012,757	60,144	194,813	43,412	202,089	55,855	585,220	57.8	427,537	290,978	467,668	771,998
Pittsburgh, Shawmut & Northern	March	198	145,311	2,117	150,544	24,273	32,135	1,513	54,638	6,798	119,357	79.3	31,187	27,971	22,363	30,881
	3 mos.	198	442,299	6,759	456,804	77,745	93,906	4,595	158,446	17,951	352,643	77.2	104,161	94,939	77,308	71,291
Quincy, Omaha & Kansas City	March	249	48,571	8,450	63,823	23,545	8,806	642	32,144	2,968	67,179	105.3	—3,356	—8,187	—10,957	—20,362
	3 mos.	249	135,958	31,745	185,283	60,341	26,983	2,119	90,911	8,221	187,203	101.0	—1,920	—16,404	—24,231	—59,596
Reading	March	1,136	6,131,347	665,944	7,167,886	885,489	1,755,368	80,995	2,812,949	207,792	5,752,930	80.3	1,414,956	1,021,551	1,121,401	1,443,872
	3 mos.	1,136	17,974,868	2,087,187	21,065,979	2,599,385	5,388,384	253,086	8,400,908	616,923	17,291,978	82.1	3,774,001	2,698,004	2,968,025	3,958,671
Atlantic City	March	161	107,536	95,434	218,635	66,152	16,851	8,149	174,002	5,756	270,903	123.9	—52,268	—89,618	—114,907	—118,574
	3 mos.	161	327,434	261,550	632,756	222,815	77,566	23,155	576,283	17,178	920,015	145.4	—287,259	—399,309	—467,580	—431,583
Perkiomen	March	41	87,953	2,889	94,218	22,260	9,970	106	48,172	1,300	81,824	86.8	12,394	7,612	1,700	25,276
	3 mos.	41	274,503	8,627	292,975	44,812	21,383	319	144,171	3,833	214,640	73.3	78,335	65,599	47,034	82,211
Port Reading	March	19	124,876	.....	152,644	16,104	6,837	229	61,896	6,433	91,497	59.9	61,147	49,029	—24,997	33,985
	3 mos.	19	435,375	.....	552,385	55,392	19,447	687	207,096	13,830	296,448	53.7	255,937	208,467	1,319	5,368
Richm'd, Fredericksburg & Potomac	March	117	429,235	404,616	1,041,068	103,272	176,282	9,209	353,826	34,259	711,807	68.4	329,261	265,761	211,068	241,671
	3 mos.	117	1,184,012	1,194,442	2,913,157	276,511	520,257	28,456	1,030,174	107,436	2,057,931	70.6	855,226	688,530	508,620	488,726
Rutland	March	413	341,874	108,713	584,332	105,091	111,473	10,686	233,760	17,640	480,690	82.3	103,642	76,367	75,663	77,812
	3 mos.	413	902,467	346,035	1,640,236	300,784	318,711	32,885	675,816	45,044	1,378,836	84.1	261,400	183,861	183,747	157,658
St. Louis-San Francisco	March	5,074	5,299,304	902,254	6,702,016	737,710	1,331,411	123,397	2,298,397	233,514	4,631,912	69.1	2,070,104	1,655,643	1,721,279	1,852,253
	3 mos.	5,054	15,022,069	2,805,302	19,188,876	2,180,400	3,961,052	354,839	6,732,028	707,724	13,718,494	71.5	5,470,382	4,383,386	4,518,844	5,224,844
Ft. Worth & Rio Grande	March	233	76,348	12,284	101,392	18,043	20,498	3,432	50,263	5,558	97,771	96.4	3,621	—508	—8,727	—22,676
	3 mos.	233	226,500	37,081	299,104	48,721	62,723	10,196	151,203	16,499	289,273	96.7	9,831	—2,521	—28,871	—46,127
St. Louis, San Francisco & Texas	March	137	116,450	10,138	131,550	19,030	24,209	5,279	53,168	7,589	109,255	83.1	22,295	19,604	—4,895	5,640
	3 mos.	137	366,398	32,888	413,096	53,483	72,575	14,566	167,110	21,299	328,951	79.6	84,145	76,134	5,757	34,416
St. Louis Southwestern	March	940	1,471,284	77,642	1,626,264	257,986	232,655	68,524	413,836	65,304	1,044,028	64.2	582,236	477,335	360,999	391,238
	3 mos.	940	4,083,413	251,107	4,540,591	561,960	659,823	205,306	1,204,918	192,598	2,842,268	62.6	1,698,323	1,450,996	1,120,663	1,018,424
St. Louis Southwestern of Texas	March	807	497,692	39,820	594,721	226,365	142,474	30,922	255,877	33,294	694,945	116.9	—100,224	—128,272	—91,051	—6,414
	3 mos.	807	1,446,136	127,517	1,726,853	543,765	371,314	91,280	759,566	101,034	1,882,010	109.0	—155,157	—238,836	—127,289	—45,525
San Diego & Arizona	March	156	90,286	29,549	120,928	18,702	16,555	4,139	32,923	8,860	82,596	68.3	38,332	32,666	32,475	43,160
	3 mos.	156	245,104	82,011	336,122	54,951	49,629	12,840	96,312	27,156	245,003	72.9	91,119	74,122	74,053	100,054
Seaboard Air Line	March	4,499	4,142,772	794,354	5,511,506	508,853	813,448	208,949	1,999,558	196,153	3,817,282	69.3	1,694,224	1,373,701	1,215,800	1,233,726
	3 mos.	4,499	11,366,399	2,914,869	15,773,511	1,692,246	2,465,846	623,779	5,939,558	581,337	11,603,558	73.6	4,169,953	3,206,819	2,819,077	2,974,064

Name of road		Av. mileage	Freight	Passenger	Total	Way and structures	Equipment	Traffic	Transportation	General	Total					
San Diego & Arizona	March	156	90,286	29,549	120,928	18,702	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	3 mos.	156	245,104	82,011	336,122	54,951	49,629	12,8[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Seaboard Air Line	March	4,499	4,142,772	794,354	5,511,506	508,853	813,448	208,949	1,999,558	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	3 mos.	4,499	11,366,399	2,914,869	15,773,511	1,692,246	2,465,846	623,779	5,939,558	581,337	11,8[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Revenues and Expenses of Railways

Month of March and Three Months of Calendar Year 1928—Continued

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Operating revenues: Passenger.	Operating revenues: Total (inc. misc.)	Operating expenses: Maintenance of—Way and structures.	Operating expenses: Maintenance of—Equipment.	Operating expenses: Traffic.	Operating expenses: Transportation.	Operating expenses: General.	Operating expenses: Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income. 1927.
Southern Ry.	March	6,772	$9,745,488	$1,869,654	$12,589,789	$1,771,744	$2,226,307	$260,737	$4,070,461	$364,520	$8,776,715	69.7	$3,813,074	$3,040,185	$2,766,184	$2,570,891
	3 mos.	6,772	26,479,974	5,861,389	35,006,844	5,143,167	6,422,588	750,541	11,953,415	1,043,449	25,550,026	73.0	9,456,818	7,196,994	6,456,270	6,528,510
Alabama Great Southern	March	314	679,604	136,650	878,151	143,013	158,713	21,635	260,715	24,481	615,063	70.0	263,088	204,775	227,477	263,184
	3 mos.	314	1,822,132	417,042	2,400,740	405,500	479,696	64,844	778,633	70,546	1,819,967	75.8	580,773	426,501	494,913	571,001
Cinn., New Orleans & Tex. Pac.	March	338	1,457,632	266,806	1,824,500	263,617	351,914	40,523	493,670	55,412	1,221,784	67.0	602,716	508,799	499,918	484,051
	3 mos.	338	3,981,227	894,221	5,154,870	813,741	1,048,672	121,903	1,489,256	162,684	3,686,147	71.5	1,468,723	1,193,227	1,136,879	1,019,409
Georgia Southern & Florida	March	401	226,980	149,400	414,047	73,120	81,145	11,290	184,251	11,985	370,580	89.5	43,467	20,593	18,178	—37,733
	3 mos.	401	644,870	440,945	1,189,145	224,090	237,355	32,524	506,426	34,412	1,060,507	89.2	128,638	62,263	58,228	—41,559
New Orleans & Northeastern	March	204	387,364	65,865	488,402	56,478	91,812	12,919	138,111	16,380	319,446	65.4	168,956	123,135	92,352	95,555
	3 mos.	204	1,062,083	211,131	1,364,779	185,310	243,789	38,030	407,796	45,490	932,747	68.3	432,032	298,026	209,946	257,411
Northern Alabama	March	110	92,537	7,001	102,196	26,720	2,851	1,831	37,927	2,784	72,021	70.5	30,175	23,775	2,867	34,969
	3 mos.	110	248,136	20,302	275,744	79,816	8,802	5,562	101,298	8,306	203,581	73.8	72,163	52,908	—13,057	61,122
Southern Pacific	March	8,909	12,685,463	3,242,326	17,508,338	2,301,204	3,061,241	461,868	5,648,461	645,129	12,378,803	70.7	5,129,535	3,782,301	3,869,127	3,400,779
	3 mos.	8,913	34,639,070	9,350,803	48,355,677	6,376,514	8,728,419	1,307,992	16,368,342	2,014,542	35,607,619	73.6	12,748,058	8,721,852	8,495,049	7,282,782
So. Pacific Steamship Lines	March	....	803,946	38,585	955,708	15,397	205,009	14,537	637,103	38,922	910,968	95.3	44,740	40,991	41,596	28,151
	3 mos.	....	2,246,980	122,084	2,747,135	49,352	559,529	53,982	1,832,469	111,729	2,607,061	94.9	140,074	131,620	131,341	251,454
Texas & New Orleans	March	4,602	4,454,446	880,290	5,779,643	866,343	1,113,461	164,573	2,059,294	267,168	4,473,000	77.4	1,306,643	956,614	686,639	376,881
	3 mos.	4,602	12,258,177	2,699,175	16,210,916	2,770,392	3,341,404	523,137	6,133,771	790,774	13,580,699	83.8	2,630,217	1,709,708	953,006	590,390
Spokane, Portland & Seattle	March	554	588,372	79,482	728,430	111,857	107,239	10,002	204,358	22,136	460,169	63.2	268,261	184,467	177,218	131,540
	3 mos.	554	1,528,601	252,157	1,955,921	266,168	310,359	30,815	615,004	65,857	1,298,225	66.4	657,696	406,427	387,817	315,374
Tennessee Central	March	296	267,649	19,667	301,666	58,026	40,090	8,590	101,655	12,572	220,790	73.2	80,876	72,592	52,135	43,753
	3 mos.	296	717,128	58,077	815,319	151,149	128,501	27,107	298,726	37,748	642,934	78.9	172,385	152,699	95,882	31,709
Terminal R. R. Assn. of St. L.	March	55	......	......	1,208,621	180,846	102,163	2,334	491,593	34,898	814,939	67.4	393,682	289,816	379,652	468,481
	3 mos.	55	......	......	3,389,634	452,955	291,835	7,172	1,418,414	88,294	2,260,982	66.7	1,128,652	826,496	1,086,383	1,215,618
Texas Mexican	March	162	100,275	3,780	110,469	9,870	17,280	3,630	28,809	5,073	64,662	58.5	45,807	40,758	34,034	9,808
	3 mos.	162	230,211	12,991	262,634	38,559	48,380	10,766	91,274	17,283	206,025	78.4	56,609	41,427	24,667	—5,438
Toledo, Peoria & Western	March	239	173,537	2,091	182,316	51,734	17,524	11,537	58,171	8,159	147,125	80.7	35,191	30,179	19,646	5,910
	3 mos.	239	459,924	9,055	489,747	132,743	51,047	32,687	171,666	24,201	412,349	84.2	77,398	65,336	34,272	—534
Toledo Terminal	March	28	......	......	124,214	6,466	16,695	472	51,865	4,629	80,127	64.5	44,087	26,587	59,782	72,749
	3 mos.	28	......	......	333,223	14,281	46,784	1,448	141,101	14,115	217,729	65.3	115,494	62,997	155,098	202,348
Trinity & Brazos Valley	March	367	153,145	7,174	167,111	40,792	32,730	5,122	79,432	11,497	157,321	94.1	9,790	2,162	—26,633	18,231
	3 mos.	367	561,439	23,357	605,232	147,020	103,160	15,867	266,876	34,541	540,243	89.3	64,989	42,266	—42,870	—7,744
Ulster & Delaware	March	128	28,018	2,814	71,835	13,186	16,560	1,247	37,707	4,805	73,505	102.3	—1,670	—7,420	—8,483	—13,243
	3 mos.	128	71,262	9,488	179,549	37,039	46,711	3,815	110,280	14,673	212,518	118.4	—32,969	—50,219	—53,390	—60,771
Union Railroad of Penna.	March	45	......	......	735,189	89,722	192,788	155	382,319	12,146	677,130	92.1	58,059	41,559	122,291	163,480
	3 mos.	45	......	......	2,065,394	205,059	526,322	478	1,113,324	38,450	1,883,633	91.2	181,761	135,261	373,592	412,352
Union Pacific	March	3,711	7,085,643	1,088,614	8,908,397	1,112,243	1,917,985	160,768	2,412,320	327,338	6,069,725	68.1	2,838,672	2,172,555	1,905,730	1,574,548
	3 mos.	3,711	19,894,822	3,185,592	25,077,239	2,331,292	5,531,106	471,241	7,130,308	992,491	16,856,026	67.2	8,221,213	6,222,899	5,575,066	4,334,897
Oregon Short Line	March	2,539	2,590,501	287,184	3,074,213	562,645	571,404	51,081	858,075	129,687	2,221,287	72.3	852,926	588,589	438,470	431,838
	3 mos.	2,539	7,253,011	878,621	8,695,896	1,240,390	1,613,877	152,523	2,543,701	384,600	6,090,207	70.0	2,605,689	1,816,365	1,543,189	1,354,412
Oregon-Wash. R. R. & Nav. Co.	March	2,343	1,912,931	265,063	2,406,231	506,880	388,689	71,030	862,516	125,119	1,978,520	82.2	427,711	239,870	92,277	52,904
	3 mos.	2,343	5,146,501	795,563	6,584,952	1,250,186	1,183,343	215,009	2,595,836	381,087	5,721,355	86.9	863,597	292,238	—119,083	75,188
Los Angeles & Salt Lake	March	1,209	1,464,796	296,814	1,943,579	380,655	393,332	83,975	620,723	77,562	1,638,070	84.3	305,509	170,488	56,514	258,936
	3 mos.	1,209	4,210,791	893,953	5,625,420	1,015,283	1,178,012	225,452	1,909,113	235,785	4,812,421	85.5	812,999	406,903	99,521	262,944
St. Joseph & Grand Island	March	258	307,175	10,939	335,632	39,251	42,793	3,418	108,082	16,182	209,726	62.5	125,906	101,117	83,783	32,266
	3 mos.	258	871,595	35,954	956,712	100,710	115,792	9,825	320,155	47,983	594,465	62.1	362,247	288,942	241,069	108,970
Utah	March	111	122,180	18	122,565	12,278	42,841	354	23,553	6,023	85,049	69.4	37,516	32,004	26,368	37,967
	3 mos.	111	486,782	18	488,119	73,862	127,391	1,133	102,440	17,907	322,733	66.1	165,386	139,291	109,139	145,993
Virginian	March	545	1,404,663	37,157	1,548,757	214,744	365,648	14,446	351,407	38,421	981,591	63.4	567,166	430,154	455,304	1,032,843
	3 mos.	545	4,451,270	119,721	4,868,189	548,069	1,062,818	43,553	1,045,405	111,500	2,806,405	57.6	2,061,784	1,604,765	1,725,226	2,917,370
Wabash	March	2,524	5,266,709	543,405	6,202,578	805,176	1,019,393	172,588	2,289,766	194,687	4,502,177	72.6	1,700,401	1,418,834	1,125,397	1,010,100
	3 mos.	2,524	13,946,383	1,697,896	16,743,999	1,924,010	2,957,204	498,855	6,643,597	553,368	12,639,961	75.5	4,104,038	3,302,010	2,400,234	2,252,166
Ann Arbor	March	293	497,369	16,838	527,914	44,478	102,719	14,502	207,620	11,145	380,673	72.1	147,241	123,147	97,277	92,120
	3 mos.	293	1,325,570	53,840	1,418,180	124,870	282,393	40,767	587,271	33,904	1,069,442	75.4	348,738	278,094	204,383	191,613
Western Maryland	March	878	1,546,905	31,159	1,629,913	229,270	305,484	41,639	483,934	44,416	1,110,919	68.2	518,994	433,994	455,072	521,829
	3 mos.	878	4,517,569	96,602	4,751,824	642,931	942,330	122,031	1,431,653	135,098	3,286,052	69.2	1,465,772	1,210,772	1,302,606	1,469,371
Western Pacific	March	1,050	931,187	106,019	1,118,508	248,361	253,676	53,643	444,680	46,937	1,063,417	95.1	55,091	—42,475	—15,502	147,913
	3 mos.	1,050	2,749,308	262,257	3,208,369	675,403	716,112	150,290	1,299,243	137,506	3,009,691	93.8	198,678	—94,347	65,402	292,436
Wheeling & Lake Erie	March	511	1,439,329	22,911	1,540,756	193,043	389,017	35,166	449,526	42,207	1,110,250	72.1	430,506	301,480	299,279	445,109
	3 mos.	511	3,868,649	73,279	4,175,061	458,144	1,063,857	100,183	1,300,687	129,605	3,056,762	73.2	1,118,299	751,052	751,862	985,780
Wichita Falls & Southern	March	168	72,041	2,244	79,831	16,769	14,000	2,911	27,051	5,299	66,006	82.68	13,825	8,324	5,086	15,954
	3 mos.	168	207,628	7,043	229,118	48,390	36,397	8,065	80,300	13,629	186,757	81.51	42,361	26,563	19,118	81,897

News of the Week

(*Continued from page 1115*)

N. W.; A. E. Clift, senior vice-president, Illinois Central; J. T. Gillick, vice-president, C., M., St. P. & P.; William J. O'Brien, general manager, Chicago Junction and Chicago River & Indiana; Carl Bucholtz, general manager, Erie.

Transportation Report in New York Regional Plan

A detailed plan of railway, waterway and subway extensions for meeting present and future transportation needs of the New York metropolitan region has been submitted to the Regional Plan Committee of New York and Its Environs by Col. William J. Wilgus, consultant of the committee on studies of transportation and port development. This report is incorporated in volume 4 of the Regional Survey, entitled "Transit and Transportation." The plan submitted by Col. Wilgus embraces:

1. An outer belt railway and boulevard, so located as to by-pass centers of congestion, serve the purpose of an "open door" to the waterfront, afford access to industrial sites on the outskirts and coordinate the unified railway terminals of the Port;

2. Twin inter-connected inner belt railways and boulevards, designed to bring all trunk line passenger service—both through and commuter—and also the main streams of highway travel, in direct touch with each and all of the principal centers of the region;

3. A unified passenger rapid transit system, laid out with a view to promoting decentralization and use as far as possible of existing railroad rights-of-way, and financed on the basis of public ownership and private operation and an equitable distribution of cost among the beneficiaries;

4. An internal freight distribution system under unified control, predicated on the universal "store door" method of collection and delivery, the avoidance of the delays, expenses and hazards of water carriage, the minimized use of the surface of city streets, and the quickened release of the railroad car—all through the use of electrically operated trains of distributive standard-gage small cars with demountable bodies, passing under the surface where desirable, between points of transfer on the outskirts and destinations throughout the Region;

5. A system of internal waterways connected with all parts of the harbor, protected where necessary from ocean storms, and operated in close harmony with rail and other carriers as regards transshipping facilities and joint rates;

6. Recreational areas, conveniently served by rail and highway—where feasible by water carriers too—in order that such areas may be easily and cheaply reached by the populace of the region regardless of state lines;

7. Industrial and port developments broadly laid out on modern lines among pleasing surroundings and served, without discrimination, by all carriers; channel depths in each locality to be ample for the purpose.

Railway Earnings for March

Class I railroads in March had a net railway operating income of $90,774,159, which, for that month, was at the annual rate of 4.66 per cent on the property investment, according to reports of the carriers compiled by the Bureau of Railway Economics. In March, 1927, the net was $94,602,380, or 4.97 per cent.

Operating revenues for March amounted to $505,184,897, compared with $531,615,880 in March, 1927, or a decrease of 5 per cent. Operating expenses totaled $373,304,702, a decrease of 5.7 per cent.

Class I railroads in March paid $31,373,359 in taxes, a decrease of $203,792 or six-tenths of one per cent as compared with the same month in 1927. This brought the total tax bill of the Class I railroads for the first three months in 1928 to $88,863,780, a decrease of $1,469,240 or 1.6 per cent.

Twenty-nine Class I railroads operated at a loss in March, of which fifteen were in the Eastern district, one in the Southern and thirteen in the Western.

For the first three months in 1928 the net railway operating income amounted to $217,347,021, at the rate of 4.41 per cent. During the corresponding period of 1927 the net was $225,531,353, or 4.69 per cent.

Operating revenues for the three months amounted to $1,419,203,158, a decrease of 4.7 per cent. Operating expenses totaled $1,085,200,515, a decrease of 5.3 per cent.

Net railway operating income by districts for the first three months, with the percentage of return based on property investment on an annual basis, was as follows:

New England Region	$ 8,506,450	5.89%
Great Lakes Region	36,114,447	4.74%
Central Eastern Region	42,946,224	4.55%
Pocahontas Region	15,135,582	6.53%
Total Eastern District	102,702,703	4.94%
Total Southern District	33,409,974	4.09%
Northwestern Region	19,288,455	3.26%
Centralwestern Region	41,775,194	4.43%
Southwestern Region	20,170,695	4.08%
Total Western District	81,234,344	4.01%
UNITED STATES	217,347,021	4.41%

The net railway operating income for the Class I railroads in the Eastern district during the first three months totaled $102,702,703, at the rate of 4.94 per cent, as compared with $115,756,181, or 5.69 per cent, in 1927. Operating revenues totaled $695,121,078, a decrease of 7.7 per cent, while operating expenses totaled $538,598,425, a decrease of 7.5 per cent. For the month of March the net was $42,896,703, compared with $50,535,086 in March, 1927.

In the Southern district for the three months the net was $33,409,974, or 4.09 per cent, as compared with $35,925,630, or 4.52 per cent, in 1927. Operating revenues amounted to $198,273,702, a decrease of 5.5 per cent, while operating expenses totaled $149,918,516, a decrease of 5.3 per cent. For March the net amounted to $14,506,397, while in the same month in 1927 it was $14,265,620.

Class I railroads in the Western district for three months had a net of $81,234,344, or 4.01 per cent, as compared with $73,849,542, or 3.73 per cent, in 1927. Operating revenues amounted to $525,808,378, a decrease of one-tenth of one per cent, while operating expenses totaled $396,683,574, a decrease of 2 per cent. For March, the net amounted to $33,371,059, as compared with $29,801,674 in March, 1927.

CLASS I RAILROADS—UNITED STATES

	Month of March 1928	1927
Total operating revenues	$ 505,184,897	$ 531,615,880
Total operating expenses	373,304,702	395,737,420
Taxes	31,373,359	31,577,151
Net railway operating income	90,774,159	94,602,380
Operating ratio—per cent	73.89	74.44
Rate of return on property investment	4.66%	4.97%
	Three months ended March 31st	
Total operating revenues	$1,419,203,158	$1,488,765,314
Total operating expenses	1,085,200,515	1,145,579,943
Taxes	88,863,780	90,333,020
Net railway operating income	217,347,021	225,531,353
Operating ratio—per cent	76.47	76.95
Rate of return on property investment	4.41%	4.69%

Senate Asks Supreme Court to Hear Richberg

The Senate took another excursion out of the field of legislation oin May 7 by adopting a resolution introduced by Senator Norris, of Nebraska, expressing its approval of the application of Donald R. Richberg, Counsel for the National Conference Committee on Valuation of American Railroads, for leave to participate in the hearing in the Supreme court in the St. Louis & O'Fallon valuation case, on the appeal taken by the railroad from the decision of the federal court at St. Louis, which denied its application for an injunction.

In the resolution as passed the Senate "most respectfully requests" the Supreme Court to permit Mr. Richberg to appear as amicus curiæ in the case for the purpose of making oral argument and filing a brief. As originally introduced the request was that he be permitted to "intervene" in the case. The resolution states that the request is made by the Senate "without thereby expressing its approval or disapproval of the arguments of counsel and without thereby intimating any opinion regarding the issues in the case."

A long preamble said that Mr. Richberg was allowed to present a brief in the lower court but that the conference was not allowed to intervene as a party and must now make application to the Supreme Court for leave to be heard. It was stated in the debate that under the rules of the court he would not be permitted to be heard except with the consent of both of the parties and that Mr. Richberg had failed to get the consent of the railroads.

Senator Norris is president of the National Conference Committee, which was organized by a number of members of congress, governors, mayors, and representatives of various organizations, including the railway labor organizations. Mr. Richberg participated in the argument before the commission in the O'Fallon case and the resolution states that he "was the only representative of a party to the proceedings who argued in favor of the

proposed report of the commission, while the official counsel for the commission made no argument for or against said report."

The resolution was adopted by a vote of 46 to 31, after about two hours of debate, in which several of the Senators took the position that it was an "impertinence" or an "impropriety" for the Senate to make such a recommendation to the Supreme Court. Senators Reed, of Pennsylvania, Shortridge, of California, Bratton, of New Mexico, and Bruce, of Maryland, particularly opposed the resolution. Several Senators said they had no doubt the court would allow Mr. Richberg's application to be heard. Senator Bruce said that the resolution "is an attempt on the part of the Senate to influence the action of the Supreme Court in a manner that calls distinctly for disapproval" and that Mr. Richberg "should be allowed to rely upon the strength of his own application."

The appeal of the St. Louis & O'Fallon from the decision of the three-judge court at St. Louis has been filed in the Supreme Court.

Air Brake Appliance Association Elects Officers

The Air Brake Appliance Association elected the following officers at a meeting which was held during the thirty-fifth annual convention of the Air Brake Association, Detroit, Mich., May 1 to 4, 1928, inclusive: President, Chas. R. Busch (Buffalo Brake Beam Company); first vice-president, Ralph F. Duysters (Simmons-Boardman Publishing Company); second vice-president, Arthur Lewis (Barco Manufacturing Company), and secretary-treasurer, Fred Venton (Crane Company). The following were elected members of the Executive Committee: Fred Speer (Gustin-Bacon Manufacturing Company); R. H. Jenkins (Nathan Manufacturing Company); H. A. Flynn (New York Air Brake Company); S. A. Witt (Detroit Lubricator Company); F. S. Wilcoxen (Edna Brass Company); Donald Charlton (Reading Iron Company); Arthur Lewis (Barco Manufacturing Company), and C. M. Hoffman (Dearborn Chemical Company).

The following is a list of the companies who exhibited products and had representatives in attendance during the convention:

American Hammered Piston Ring Company, Baltimore, Md.—Hammer machine for peening piston rings; piston rings and casting sprew individual castings. Represented by A. W. Morton and John A. Worthington.

American Locomotive Company, New York.—Type G power reverse gear and literature. Represented by W. J. Leisenring and M. D. Raymond.

Ashton Valve Company, Cambridge, Mass.—Locomotive safety valves, steam and air brake gages, recording gages and back pressure gages. Represented by H. O. Fettinger and Joseph F. Gettrust.

Barco Manufacturing Company, Chicago.—Flexible joints, lubricator plug valve and metallic steam heat car connections. Represented by A. S. Lewis, J. L. McLean and C. L. Mellor.

Brake Equipment & Supply Company, Chicago.—Standard air brake repair parts, angle cut-out cock and triple valve repairs, slide valve lapping plates, gages, etc. Represented by L. E. Hassman, J. R. McClintock, B. Pratt and J. F. Pratt.

Buffalo Brake Company, New York.—Safety brake beam support, absorption side bearing, self-locking brake shoe key, self-locking pins and self-locking draft key locks. Represented by Chas. R. Busch and E. F. Gladwell.

Byers, A. M., Company, Pittsburgh, Pa.—Genuine wrought iron pipe and literature. Represented by J. H. Ainsworth, C. A. Croft, C. W. Damberg, E. B. Story and F. W. Stubbs.

Chicago Railway Equipment Company, Chicago.—Third and fourth brake beam supports and safety guard, Economy brake beam safety guard and bottom rod guard.

Corley-DeWolfe Company, Elizabeth, N. J.—Ground joint pipe unions. Represented by Ralph A. Corley.

Crane Company, Chicago.—Locomotive valves, railroad unions and union fittings for air brake work and power plant specialties. Represented by John B. Jordan and Fred Venton.

Davis Brake Beam Company, Johnstown, Pa.—Brake beams, journal box lids and literature. Represented by W. R. Kennedy.

Dearborn Chemical Company, Chicago.—No-Ox-Id. Represented by J. A. Crenner, C. M. Hoffman, R. Q. Milnes and C. I. Laudenback.

Detroit Lubricator Company, Detroit, Mich.—Model A force feed lubricator, flange oiler, Bullseye hydrostatic lubricator and transfer filler. Represented by W. B. Drake, C. E. Sperry and S. A. Witt.

Dixon, Joseph, Crucible Company, Jersey City, N. J.—Lubricants, graphite, belt dressing and spring oil. Represented by J. S. Pendleton and J. M. Willitts.

Edna Brass Manufacturing Company, Cincinnati, Ohio.—Water column, water gages, boiler checks, air manifolds, oil burners, oil cups, air operated cylinder cocks and mechanical lubricators. Represented by Wm. Beck, E. O. Corey and F. S. Wilcoxen.

Foster-Johnson Reamer Company, Elkhart, Ind.—Air brake reamers and honing machine. Represented by F. Enos, Louis Groessl and C. B. Whitmyer.

Franklin Railway Supply Company, New York.—Photographs and literature. Represented by Paul Weiler.

Garlock Packing Company, Palmyra, N. Y.—Air pump packing, throttle packing, cab valve packing, asbestos cups for various types of reverse gears and reverse gear piston packing. Represented by L. P. Duggan.

General Railway Signal Company, Rochester, N. Y.—Signal appliances and literature. Represented by S. Mashier.

George Manufacturing Company, Philadelphia, Pa.—Automatic drain and relief valves and automatic drain valves for steam and air. Represented by R. H. George.

Gold Car Heating & Lighting Company, Brooklyn, N. Y.—Pressure reducing valve, starting valve, steam hose couplers, molded steam hose, end valves, vapor valve and automatic drain cock for air pumps. Represented by J. O. Brumbaugh and A. D. Stuver.

Goodall Rubber Company, Philadelphia, Pa.—Semi-metallic A. R. A. hose, squirt hose and lip gaskets. Represented by C. L. Butler and George W. O'Neill.

Graham-White Sander Company, Roanoke, Va.—Sanders, sand spreaders and automatic sander for boosters and electric cars. Represented by H. L. Burrhus, F. H. Smith and W. H. White.

Gustin-Bacon Manufacturing Company, Kansas City, Mo.—Air brake gaskets, air brake cups (leather, Flextite and Kendall); perfect air pump strainer; brake pipe clamp; air hose couplings and post valves; emery brake cylinder lubricant; air brake and signal hose, couplings, nipples and clamps; steam hose nipples and clamps; throttle rod stuffing box and emergency brake pipe coupling. Represented by Wm. E. Davis, Clark Diller, Jas. S. Hearons, Glenn R. Miller, D. P. Morgan and Fred Speer.

Illinois Railway Equipment Company, Chicago.—Pipe clamps, brake hanger suspension, retaining valve anchor, positive brake pin lock and literature. Represented by V. H. Harbert and B. S. Rockwell.

International Correspondence Schools (Railroad Department), Scranton, Pa.—Literature. Represented by W. H. Harus, F. B. Petifras and Ed. M. Sawyer.

International Train Pipe Corporation.—Air, steam and signal connector, photographs and literature.

Johns-Manville Corporation, New York.—Reverse gear piston, truck rod and sleeve packing; booster ball joint packing; engineers' insulating tape; feedwater heater packing; slip-type expander rings; Mallet ball- and slip-joint packing; throttled air pump packing and die-cut gaskets. Represented by W. R. Bush, J. D. Johnson, G. A. Nichol, T. O'Leary and P. E. Redding.

Leslie Company, Lyndhurst, N. J.—Steam heat regulators, pump regulators and strainers. Represented by Jos. Cizek and S. I. Leslie.

Metallo Gasket Company, New Brunswick, N. J.—Cylinder, pipe and air compressor gaskets. Represented by Z. Schultes.

Miner, W. H., Inc., Chicago.—Safety hand brakes. Represented by B. S. Johnson, A. G. Peterson, W. E. Robertson and A. P. Withall.

Nathan Manufacturing Company, New York.—Mechanical lubricators. Represented by Otto Best, F. Eherdt, R. H. Jenkins, Frank Marsh, William Walsh and W. R. Welch.

National Malleable & Steel Castings Company, Cleveland, Ohio.—Freight car power hand brakes and literature. Represented by F. Emoffelt, Fred K. LeVake and David Robinson.

National Tube Company, Pittsburgh, Pa.—Scale free process, welded and seamless pipe and literature. Represented by H. G. Breckenridge, P. J. Conrath, H. T. Miller and H. R. Redington.

New York Air Brake Company, New York.—Sectional U-12-B universal valve, Wabco gaskets, centrifugal air pump strainer, A. R. A. standard hose couplings, A. R. A. retaining valve, angle cock and literature. Represented by G. A. Allen, J. D. Cartin, Chas. Campbell, H. A. Flynn, H. F. Halladay, G. Kleifges, L. W. Sawyer, Jas. Smith and E. F. Wentworth.

New York & New Jersey Lubricant Company, New York.—Lubricant for car lighting equipment, brake cylinder and triple valve lubricants. Represented by Jos. H. Bennis and H. G. Brown.

Oakite Products, Inc., New York.—Materials and methods for cleaning air pumps and machinery parts, etc., for cleaning locomotive frames and gears with steam, and paint stripping materials. Represented by J. A. Carter and H. L. Gray.

Okadee Company, Chicago.—Railroad and mill supplies, automatic cylinder cock, front end hinge, blow-off cocks, drain valves, tender hose and couplers. Represented by G. P. Dirth, W. H. Heckman, A. J. Hollingshead, J. S. Lemley, Chas. R. Long, Jr., J. M. Monroe and M. H. Oakes.

Oxweld Railroad Service Company, Chicago.—Welding and cutting equipment. Represented by M. A. Deaton and E. D. Drew.

Pilot Packing Company, Inc., Chicago.—Pilot packing and literature. Represented by Joseph Sinkler.

Pocket List of Railroad Officials, New York.—Pocket lists. Represented by Harold O. Brown.

Pyle-National Company, Chicago.—Train control turbo generator. Represented by Geo. E. Haas and Crawford P. McGinnis.

Reading Iron Company, Reading, Pa.—Exhibit showing manufacture of wrought iron pipe and special pipe adapted to railroad and air brake service, together with photographs showing automatic train installations on various roads, and literature giving technical data on pipe for railroad service. Represented by J. K. Aimer, Donald Charlton, W. F. Hoff, C. T. Ressler and H. L. Shepard.

Richmond Piston Ring Company, Richmond, Ind.—Ring board showing various sizes of rings used for repairs in locomotive appliances, also sample rings giving various steps or stages of manufacture. Represented by R. A. Booker and H. L. Burrhus.

Robinson Connector Company, New York.—New Robinson automatic train pipe hose connector. Represented by Joseph Robinson.

Sellers, Wm., & Co., Inc., Philadelphia, Pa.—Exhaust feedwater heater injector with automatic exhaust regulating valve, duplex steam lever valve, retarding valve and cab stand, complete equipment for locomotives, non-lifting injector with lever operating valve. Represented by John D. McClintock and P. E. Raymond.

Sheldon Machine Company, Chicago.—Grinder for triple and distributing valves, holding fixture for triple and distributing valve, feed valve piston spreader and grinder, superheater grinder and frame jaw grinder. Represented by H. J. Duernberger and E. D. Garfield.

Simmons-Boardman Publishing Company.—Copies of Railway Age and Railway Mechanical Engineer. Represented by Ralph S. Duysters and Marion B. Richardson.

Snap-On Wrench Company, Milwaukee, Wis.—Crank, extension and socket wrenches, literature. Represented by A. N. Crandall and C. H. Tennyson.

Special Bolt Machinery Corporation, New York. Valve finishing machine. Represented by Walter H. Foster and H. L. Kenah.

Union Draft Gear Company, Chicago.—Cardwell friction draft gear. Represented by L. T. Canfield, W. Eckels, C. J. Gorman and R. W. Schulze.

Union Railway Equipment Company, Chicago.—High power hand brakes, stationary and drop types, non-club wheel and storm proof ratchet. Represented by George E. Coffey and James A. Galligan.

Union Switch & Signal Company, Swissvale, Pa.—Cross sectioned brake valve for train-control-equipped engines, combined timing and magnet valve, five types of cab signals in operation, colored photographs of various installations and colored diagrammatics of the pneumatic system for train control. Represented by W. H. Horsch and K. E. Kellenberger.

United States Graphite Company, Saginaw, Mich.—Brake cylinder lubricant, triple valve graphite and pipe joint compound. Represented by Walter R. Pflasterer.

Vapor Car Heating Company, Inc., Chicago.—Train pipe valve, 2-in. flexible metal joints, 2-in. coupler, pressure reducing valve and yard joints. Represented by Lewis B. Rhodes.

Viloco Railway Equipment Company, Chicago.—Sander, vacuum bell ringer, floating journal bearing, locomotive exhaust pipe and pneumatic whistle operator. Represented by G. P. Dirth, W. H. Heckman, A. G. Hollingshead, G. S. Lemley, Chas. R. Long, J. J. Melley, J. J. Monroe and M. H. Oakes.

Walworth Company, New York.—Valves, fittings, pipe wrenches and literature. Represented by P. B. Miller, W. J. Moran and E. S. Rawson, Jr.

Westinghouse Air Brake Company, Wilmerding, Pa.—H6 automatic and S6 independent brake valves with pedestal mounting, sectioned 10-in. brake cylinder fitted with brake cylinder dirt protector; non rusting A. R. A. hose couplings; hose coupling gages; revised A. R. A. double-pressure retaining valve; improved 1¼-in. angle cock with U-bolt extension; improved packing rings for air compressors, triple valves, etc.; improved air valves for air compressors; new centrifugal dirt collectors; improved hose clamps; packing cups and gaskets; centrifugal air cleaner for air compressors; new cylinder cap for universal valves; flange unions for detached brake cylinder and auxiliary reservoir; sectioned steel reservoir; pneuphonic horn, operated by air pressure, for train signalling, etc. Represented by F. W. Ainsworth, A. L. Berghane, H. H. Burns, L. M. Carlton, C. M. Clifford, R. I. Cunningham, W. E. Dean, C. C. Farmer, F. B. Farmer, J. S. Y. Fralich, H. B. Gardner, J. R. Holtom, John Hume, A. G. Huston, R. P. Ives, F. B. Johnson, R. J. Knapp, E. A. Maylock, J. C. McCune, R. E. Miller, T. G. Myles, T. W. Newburn, F. H. Parke, W. M. Sleet, H. J. Robinson, F. S. Thomas, T. H. Thomas, V. Villette, E. H. Weaver, R. K. Whittlesey and J. B. Wright.

Exhibitors at June Conventions

The following firms will have exhibits at Atlantic City next month, under the direction of the Railway Supply Manufacturers' Association, at the conventions of Division V—Mechanical, Division VI—Purchases and Stores, and the Motor Transport Division of the American Railway Association, and the summer meeting of the Association of Railway Electrical Engineers. The exhibits will be on the Million Dollar Pier and in a large new structure connected with it and extending southward along the Boardwalk. Division V will meet June 20-27, Division VI June 20-22, the Motor Transport Division June 21-23, and the Association of Railway Electrical Engineers on June 21.

Adams & Westlake Co., Elkhart, Ind.
Air Reduction Sales Co., New York.
Allegheny Steel Co., Brackenridge, Pa.
Aluminum Co. of America, Pittsburgh, Pa.
American Arch Co., Inc., New York.
American Brake Shoe & Foundry Co., New York.
American Brown Boveri Electric Corp., New York.
American Car & Foundry Co., New York.
American Car & Foundry Motors Co., New York.
American Locomotive Co., New York.
American Optical Co., New York.
American Steel Foundries, Chicago.
American Throttle Co., Inc., New York.
Ames Shovel & Tool Co., Boston, Mass.
Anchor Packing Co., Philadelphia, Pa.
Arlac Dry Stencil Corp., Pittsburgh, Pa.
Ashton Valve Co., Cambridge, Mass.
Associated Publishing Co., Inc., Los Angeles, Cal.
Association of Manufacturers of Chilled Car Wheels, Chicago.
Atkins, E. C., & Co., Indianapolis, Ind.
Automatic Transportation Co., Inc., Buffalo.
B. & S. Manufacturing Corp., Hoboken, N. J.
Baker-Raulang Co., Cleveland, O.
Baldwin & Conrad, Eldon, Iowa.
Baldwin Locomotive Works, Philadelphia, Pa.
Barco Manufacturing Co., Chicago.
Basford, G. M., Co., New York.
Bassick Manufacturing Co., Chicago.
Bethlehem Steel Co., Bethlehem, Pa.
Bettendorf Co., Bettendorf, Iowa.
Bicknell-Thomas Co., Greenfield, Mass.
Bird-Archer Co., New York.
Black & Decker Manufacturing Co., Towson, Md.
Bosch, Robert, Magneto Co., Inc., Long Island City, N. Y.
Bowser, S. F., & Co., Inc., Fort Wayne, Ind.
Bradford Corp., New York.
Bragg-Kliesrath Corp., Long Island City, N. Y.
Brewster, Morris B., Inc., Chicago.
Brill, The J. G., Co., Philadelphia, Pa.
Brown-Lipe Gear Co., Syracuse, N. Y.
Brubaker, W. L., & Brothers Co., New York.
Buckeye Portable Tool Co., Dayton, Ohio.
Buckeye Steel Castings Co., Columbus, Ohio.
Buffalo Brake Beam Co., New York.
Buffalo Forge Co., Buffalo, N. Y.
Burden Iron Co., Troy, N. Y.
Byers, A. M., Co., Pittsburgh, Pa.
Camden Forge Co., Camden, N. J.
Camel Co., Chicago, Ill.
Carbo-Oxygen Co., Pittsburgh, Pa.
Carnegie Steel Co., Pittsburgh, Pa.
Celotex Co., Chicago.
Central Alloy Steel Corp., Massillon, Ohio.
Central Iron & Steel Co., Harrisburg, Pa.
Central Valve Manufacturing Co., Chicago.
Chase, L. C., & Co., Boston, Mass.
Chaton Fibre Co., Boston, Mass.
Chicago-Cleveland Car Roofing Co., Chicago.
Chicago Pneumatic Tool Co., New York.
Chicago Railway Equipment Co., Chicago.
Chisholm-Moore Manufacturing Co., Cleveland, Ohio.
Clark Car Co., Pittsburgh, Pa.
Clark Manufacturing Co., Philadelphia, Pa.
Clark Tructractor Co., Battle Creek, Mich.
Cleveland Pneumatic Tool Co., Cleveland, Ohio.
Cleveland Tanning Co., Cleveland, Ohio.
Cleveland Twist Drill Co., Cleveland, Ohio.
Coffin, The J. S., Jr., Co., Jersey City, N. J.
Commonwealth Steel Co., Granite City, Ill.
Consolidated Ashcroft Hancock Co., New York.
Consolidated Car-Heating Co., Inc., Albany, N. Y.
Consolidated Connector Corp., Cleveland, Ohio.
Consolidated Expanded Metal Cos., Wheeling, W. Va.
Consolidated Machine Tool Corp. of America, Rochester, N. Y.
Corley-DeWolfe Co., Elizabeth, N. J.
Cowdrey Brake Tester Organization, Inc., Fitchburg, Mass.
Crane Co., Chicago, Ill.
Crosby Steam Gage & Valve Co., Boston, Mass.
Crowe Manufacturing Corp., Cincinnati, Ohio.
Curtin-Howe Corp., New York.
Davis Brake Beam Co., Johnstown, Pa.
Dearborn Chemical Co., Chicago.
Detroit Lubricator Co., Detroit, Mich.
DeVilbiss Company, Toledo, Ohio.
Dickinson, Paul, Inc., Chicago.
Disston, Henry, & Sons, Inc., Philadelphia, Pa.
Dixon, Joseph, Crucible Co., Jersey City, N. J.
Dressel Railway Lamp & Signal Co., Arlington, N. J.
Dromgold & Glenn, Chicago.
Durametallic Corp., Kalamazoo, Mich.
Eagle-Ottawa Leather Co., New York.
Edgewater Steel Co., Pittsburgh, Pa.
Edison Storage Battery Co., Orange, N. J.
Edna Brass Manufacturing Co., Cincinnati, O.
Edson Manufacturing Corp., Boston, Mass.
Edwards, The O. M., Co., Inc., Syracuse, N. Y.
Electric Service Supplies Co., Philadelphia, Pa.
Electric Storage Battery Co., Philadelphia, Pa.
Elliott Co., Jeannette, Pa.
Elwell-Parker Electric Co., Cleveland, Ohio.
Enterprise Railway Equipment Co., Chicago.
Equipment Specialties Co., Chicago.
Everlasting Valve Co., Jersey City, N. J.
Ewald Iron Co., Louisville, Ky.
Falls Hollow Staybolt Co., Cuyahoga Falls, O.
Flannery Bolt Co., Pittsburgh, Pa.
Foley Saw Tool Co., Inc., Minneapolis, Minn.
Ford, The J. B., Co., Wyandotte, Mich.
Forsyth Draft Gear Corp., Chicago, Ill.
Fort Pitt Malleable Iron Co., Pittsburgh, Pa.
Franklin Railway Supply Co., Inc., New York.
Frost Railway Supply Co., Detroit, Mich.
Gairing Tool Co., Detroit, Mich.
Galena-Signal Oil Co., Franklin, Pa.
Garlock Packing Co., Palmyra, N. Y.
General Electric Co., Schenectady, N. Y.
Giant Manufacturing Co., Council Bluffs, Ia.
Giessel, Henry, Co., Chicago, Ill.
Gilg, Henry F., Pittsburgh, Pa.
Gold Car Heating & Lighting Co., Brooklyn, N. Y.
Goodrich, The B. F., Rubber Co., Akron, Ohio.
Goodyear Tire & Rubber Co., Inc., Akron, Ohio.
Gould Coupler Co., New York.
Gould Storage Battery Co., Inc., New York.
Graham Bolt & Nut Co., Pittsburgh, Pa.
Graham-White Sander Corp., Roanoke, Va.
Griffin Wheel Co., Chicago.
Grip Nut Co., Chicago.
Hale & Kilburn Co., Philadelphia, Pa.
Hanlon Locomotive Sander Co., Winchester, Mass.
Hanna Stoker Co., Cincinnati, Ohio.
Hennessy, J. J., New York.
Heywood-Wakefield Co., Wakefield, Mass.
Hisey-Wolf Machine Co., Cincinnati, Ohio.
Hubar-Jones Corp., New York.
Hulson Grate Co., Keokuk, Iowa.
Hunt-Spiller Manufacturing Corp., South Boston, Mass.
Hutchins Car Roofing Co., Detroit, Mich
Hutto Engineering Co., Detroit, Mich.
Hyatt Roller Bearing Co., Newark, N. J.
Hynson, Westcott & Dunning, Baltimore, Md.
Illinois Steel Co., Chicago.
Independent Pneumatic Tool Co., Chicago.
Industrial Brownhoist Corp., Cleveland, Ohio.
Ingersoll-Rand Co., New York.
International Nickel Co., Inc., New York.
Interstate Iron & Steel Co., Chicago.
Irving Iron Works Co., Long Island City, N. Y.
Jenkins Brothers, New York.
Johns-Manville Corp., New York.
Jones & Laughlin Steel Corp., Pittsburgh, Pa.
K-G Welding & Cutting Co., Inc., New York.
Keller, William H., Inc., Grand Haven, Mich.
Kerite Insulated Wire & Cable Co., New York.
Key-Bolt Appliance Co., Elmira, N. Y.
Keyoke Railway Equipment Co., Chicago.
Keystone Grinder & Manufacturing Co., Pittsburgh, Pa.
Klasing Car Brake Co., Chicago.
Landis Machine Co., Waynesboro, Pa.
Lang Body Co., Cleveland, Ohio.
Lebanon Steel Foundry, Lebanon, Pa.
Lehmann Machine Co., St. Louis, Mo.
Lehon Co., Chicago.
Libbey Glass Manufacturing Co., Toledo, Ohio.
Link-Belt Co., Indianapolis, Ind.
Locomotive Finished Materials Co., Atchison, Kan.
Locomotive Firebox Co., Chicago.
Long, Charles R., Jr., Co., Inc., Louisville, Ky.
Lovell, F. H., & Co., Arlington, N. J.
Lukens Steel Co., Coatesville, Pa.
Lunkenheimer Co., Cincinnati, Ohio.
Mack-International Motor Truck Corp., New York.
MacLean-Fogg Lock Nut Co., Chicago.
MacRae's Blue Book Co., Chicago.
Madison-Kipp Corp., Madison, Wis.
Manganese Steel Forge Co., Philadelphia, Pa.
Massachusetts Mohair Plush Co., Boston, Mass.
Metal & Thermit Corp., New York.
Micro Machine Co., Bettendorf, Iowa.
Midgley & Borrowdale, Chicago.
Midland Co., South Milwaukee, Wis.
Midway Railway Equipment Co., Chicago.
Milar, Clinch & Co., Chicago.
Milburn Co., The Alexander, Baltimore, Md.
Miner, W. H., Inc., Chicago.
Morton Manufacturing Co., Chicago.
Morton Manufacturing Co., Muskegon Heights, Mich.
Mudge & Co., Chicago.
Murray Corp. of America, Detroit, Mich.
McConway & Torley Co., Pittsburgh, Pa.
Nathan Manufacturing Co., New York.
National Bearing Metals Corp., New York.
National Boiler Washing Co. of Illinois, Chicago.
National Brake Co., Inc., Buffalo, N. Y.
National Carbide Sales Corp., New York.
National Lead Co., New York.
National Lock Washer Co., Newark, N. J.
National Malleable & Steel Castings Co., Cleveland, Ohio.
National Pneumatic Co., New York.
National Railway Appliance Co., New York.
National Railway Devices Co., Chicago.
National Tube Co., Pittsburgh, Pa.
New York Air Brake Co., New York.
Niles-Bement-Pond Co., New York.
Niles Crane Corp., New York.
Niles Gear Co., New York.
Niles Tool Works Co., New York.
Nuttall, R. D., Co., Pittsburgh, Pa.
Oakite Products, Inc., New York.
Ohio Brass Co., Mansfield, Ohio.
Ohio Injector Co., Chicago.
Ohmer Fare Register Co., Dayton, Ohio.
O. K. Tool Company, Inc., Shelton, Conn.
Okadee Company, Inc., Chicago.
Okonite Company, New York.
Old Dominion Iron & Steel Works, Inc., Richmond, Va.
Oxweld Railroad Service Co., Chicago.
Paige & Jones Chemical Co., Inc., New York.
Paint Products Corp., Philadelphia, Pa.
Pantasote Company, Inc., New York.
Paxton-Mitchell Co., Omaha, Neb.
Peerless Machine Co., Racine, Wis.
Pels, Henry, & Co., Inc., New York.
Penn Iron & Steel Co., Creighton, Pa.
Pilliod Co., Swanton, Ohio.
Pilot Packing Co., Inc., Chicago.
Pittsburgh Steel Foundry Corp., Glassport, Pa.
Pittsburgh Testing Laboratory, Pittsburgh, Pa.
Pocket List of Railroad Officials, New York.
Pratt & Whitney Aircraft Corp., New York.
Pratt & Whitney Co., New York.
Pressed Steel Car Co., Pittsburgh, Pa.
Production Machine Co., Greenfield, Mass.
Pyle-National Co., Chicago.
Q & C Co., New York.
Quigley Furnace Specialties Co., Inc., New York.
Railroad Herald, Atlanta, Ga.
Railway Centrifix Co., Cleveland, Ohio.
Railway Devices Co., St. Louis, Mo.
Railway Purchases & Stores, Chicago, Ill.

Railway Service & Supply Corp., Indianapolis, Ind.
Ralston Steel Car Co., Columbus, Ohio.
Reading Iron Co., Reading, Pa.
Rekeen Tool Co., Inc., Baltimore, Md.
Reliance Machine & Stamping Works, Inc., New Orleans, La.
Remington Rand Business Service, Inc., New York.
Robinson Automatic Connector Co., New York.
Roebling's, John A., Sons Co., Trenton, N. J.
Rogatchoff Co., Baltimore, Md.
Rome Iron Mills, Inc., New York.
Royal Railway Supply Co., Inc., New York.
Ryerson, Joseph T., & Son, Inc., Chicago.
S K F Industries, Inc., New York.
Safety Car Heating & Lighting Co., New York.
Safety Equipment Service Co., Cleveland, Ohio.
St. Louis Car Co., St. Louis, Mo.
Sargent Co., Chicago.
Schaefer Equipment Co., Pittsburgh, Pa.
Shaw, Crane-Putnam Co., Inc., New York.
Scullin Steel Co., New York.
Scully Steel & Iron Co., Chicago.
Sellers, William, & Co., Inc., Philadelphia, Pa.
Sherwin-Williams Co., Cleveland, Ohio.
Simmons-Boardman Publishing Co., New York.
Simonds Saw & Steel Co., Fitchburg, Mass.
Simplex Wire & Cable Co., Boston, Mass.
Smith, David H., & Sons, Inc., Brooklyn, N. Y.
Smith, Peter, Heater & Mfg. Co., Detroit, Mich.
Southern Wheel Co., New York.
Standard Auto Tite Joints Co., Pittsburgh, Pa.
Standard Car Truck Co., Chicago.
Standard Coupler Co., New York.
Standard Oil Co. of Louisiana, New Orleans, La.
Standard Oil Co. of New Jersey, New York.
Standard Railway Equipment Co., Chicago.
Standard Steel Works Co., Philadelphia, Pa.
Standard Stoker Co., Inc., New York.
Starrett, The L. S., Co., Athol, Mass.
Stucki, A., Co., Pittsburgh, Pa.
Studebaker Corp. of America, South Bend, Ind.
Sullivan Machinery Co., Chicago.
Sunbeam Electric Manufacturing Co., Evansville, Ind.
Superheater Co., New York.
Swind Machinery Co., Philadelphia, Pa.
Symington Co., New York.
T-Z Railway Equipment Co., Chicago.
Talmage Manufacturing Co., Cleveland, Ohio.
Textileather Corp., Newark, N. J.
Timken-Detroit Axle Co., Detroit, Mich.
Timken Roller Bearing Co., Canton, Ohio.
Tuco Products Corp., New York.
Tyler Tube & Pipe Co., Washington, Pa.
Ulster Iron Works, New York.
Underwood, H. B., Corp., Philadelphia, Pa.
Union Asbestos & Rubber Co., Chicago.
Union Carbide Sales Co., New York.
Union Draft Gear Co., Chicago.
Union Metal Products Co., Chicago.
Union Railway Equipment Co., Chicago.
Union Spring & Manufacturing Co., Pittsburgh, Pa.
United Engineers & Constructors, Inc., Philadelphia, Pa.
United States Rubber Co., New York.
Universal Draft Gear Attachment Co., Chicago.
Universal Packing & Service Co., Chicago.
Universal Packing Corp., Pittsburgh, Pa.
Vanadium Corporation of America, New York.
Vapor Car Heating Co., Inc., Chicago.
Viloco Railway Equipment Co., Chicago.
Walworth Co., Boston, Mass.
Wappat Gear Works, Inc., Pittsburgh, Pa.
Watson-Stillman Co., New York.
Waugh Equipment Co., Chicago.
West Disinfecting Co., Chicago.
Western Railway Equipment Co., St. Louis, Mo.
Western Tool & Mfg. Co., Springfield, Ohio.
Westinghouse Air Brake Co., Wilmerding, Pa.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
Westinghouse Friction Draft Gear Co., Wilmerding Pa.
Weston Electrical Instrument Corp., Newark, N. J.
Wheel Truing Brake Shoe Co., Detroit, Mich.
White Co., Cleveland, Ohio.
Whiting Corp., Harvey, Ill.
Wicaco Screw & Machine Works, Inc., Philadelphia, Pa.
Willard Storage Battery Co., Cleveland, Ohio.
Williams Tool Corp., Erie, Pa.
Wilson-Imperial Co., Newark, N. J.
Wine Railway Appliance Co., Toledo, Ohio.
Wood, Alan, Iron & Steel Co., Philadelphia, Pa.
Wood Conversion Co., Chicago.
Woods, Edwin S., & Co., Chicago.
Worthington Pump & Machinery Corp., New York.
Yale & Towne Manufacturing Co., Stamford, Conn.
Yellow Truck & Coach Manufacturing Co., Chicago.
Youngstown Steel Door Co., Cleveland, Ohio.

Traffic

The investigation of class rates in western trunk line territory conducted by the Interstate Commerce Commission ended in Chicago on May 2 following a series of hearings which have been held throughout the territory during the past 18 months. Briefs were ordered filed by July.

The Long Island has announced that it will place on sale a twenty-trip family ticket between all points on its lines. These tickets will be in addition to the fifty-trip family tickets now being issued. The exact date the company will be prepared to sell the new tickets has not been determined, but it will be not later than July 1.

The Norfolk Southern announces that, to test the question whether or not the cheapness of automobile travel is the reason for the large falling off in passenger traffic which the road has sustained, round trip tickets are to be sold experimentally to and from Norfolk, Elizabeth, Hertford, Edenton and points between, at rates but a trifle above the one-way fare. It is proposed to carry on the experiment for two weeks. According to the Official Guide, there are two passenger trains daily each way between Norfolk and Edenton, 82 miles.

Advisory Board Meetings in June

The next regular meeting of the Central Western Shippers' Advisory Board will be held in the Hotel Colorado at Glenwood Springs, Colo., on June 28. Subjects such as the adequacy of storage facilities at point of origin, the heavier loading of cars, the orderly processes of marketing and distribution and related problems will be discussed. Other regional board meetings during June include:

The Ohio Valley Advisory Board, June 5, Indianapolis, Ind.
Pacific Northwest Advisory Board, June 8, Seattle, Wash.
Southeast Shippers' Advisory Board, June 8, Savannah, Ga.
Allegheny Regional Advisory Board, June 14, Steubenville, Ohio.
Pacific Coast Transportation Advisory Board, June 15, Fresno, Cal.
Trans-Missouri-Kansas Shippers' Advisory Board, June 20, Wichita, Kan.
Great Lakes Regional Advisory Board, June 20, Buffalo, N. Y.
New England Regional Advisory Board, June 25, Boston, Mass.

Increased Differentials for Baltimore and Philadelphia Recommended

The Interstate Commerce Commission on April 11 made public a proposed report by Attorney-Examiner R. N. Trezise in the Baltimore port differential case, Baltimore Chamber of Commerce v. Ann Arbor Railroad et al, recommending that the commission find the present export and import differentials in rates to and from Baltimore and in some cases to Philadelphia, below the rates to New York, to be unreasonable and unduly prejudicial to those ports and to the advantage of New York. As to export and import rates on general commodities, except coal, between differential territory and Baltimore, the examiner recommends that the differential be increased to 6 cents on traffic above fourth class, to 5 cents on traffic rated fifth class or lower. As to export rates on all-rail grain in carloads he recommends a differential of 3½ cents to Baltimore and 3 cents to Philadelphia, and as to export rates on ex-lake grain, in carloads, from Buffalo to Baltimore and Philadelphia, he recommends a differential of 2 cents below the rate to New York.

New England Complains Against Canada

A resolution was introduced in the Senate on May 3 by Senator Walsh, of Massachusetts, and in the House by Representative Beedy, of Maine, requesting the Secretary of State, the Secretary of Agriculture, the Shipping Board and the Interstate Commerce Commission, to investigate, in co-operation with each other, "the factors which are contributing to the diversion of commerce from points in the United States to Canadian Ports, . . ." The resolution was adopted by the Senate on May 7.

It states that during the past ten years there has been diversion of commerce to Canadian ports, particularly in grain and other farm products, so great as to threaten the prosperity of the ports of the United States and to affect seriously the agricultural and transportation interests and the merchant marine. Complaint is made of (1) more favorable railroad rates between points in the United States and Canadian ports; (2) more stringent inspection of grain at our ports; (3) the preferential customs regulations of Canada; and (4) the preferential schedules of other ports of the British Empire.

Transit Privileges in Oregon Contested

Nine railroads and an associated company filed suit in the federal district court at Portland, Ore., on May 2 against the public service commission of Oregon attacking the rulings of the commission relative to shipments involving transit privileges, and seeking a temporary injunction restraining the enforcement of orders of the commission relative to certain rates to be applied upon such shipments. The plaintiff companies contend that under the rulings they are subject to a multiplicity of suits, penalty under the state law and general loss of revenue.

The plaintiffs are the Oregon-Washington Railroad & Navigation Company, the Oregon Short Line, the Spokane, Portland & Seattle, the Southern Pacific, the Oregon Trunk, the Oregon Electric, the United Railways, the Portland Electric Power Company, the Willamette Valley Southern and the Northern Pacific Terminal.

The plaintiffs contend that if they are compelled to grant such transit privileges to all shipments to which the orders of the commission are applicable, the result will be that the compensation lawfully due the carriers will be reduced in large amounts. It is further contended that the ruling of the commission as to transit

privileges is arbitrary and does not follow any hearing or investigation.

Better Time Between Chicago and the Twin Cities

The Chicago, Milwaukee, St. Paul & Pacific, the Chicago & North Western and the Chicago, Burlington & Quincy have established 10-hr, 30 min. schedules from Chicago to St. Paul, Minn. The return time has been reduced 50 min. or to 11 hours.

Under the new schedule the Viking of the Chicago & North Western leaves Chicago at 10:30 a.m. as previously and arrives in St. Paul at 9:00 p.m. instead of 10:20 and Minneapolis at 9:35 p.m. instead of 10:55. Returning, it leaves Minneapolis at 7:55 a.m. instead of 7:40, St. Paul at 8:35 instead of 8:20 and arrives in Chicago at 7:30 p.m. instead of 8:10. The new schedule of the Day Express of the Chicago, Milwaukee, St. Paul & Pacific was given in the *Railway Age* of May 5.

The North Coast Limited of the Chicago, Burlington & Quincy will henceforth be known as the New North Coast Limited. It leaves Chicago at 12:10 p.m. instead of 10:35 a.m. and arrives in St. Paul at 10:40 p.m. instead of 10:25 and Minneapolis, at 11:35 p.m. instead of 11:25. Returning, it leaves Minneapolis at 8:30 p.m. and St. Paul at 9:30 as previously and arrives in Chicago at 9:00 a.m. instead of 9:25. On June 18 the Burlington will add a new train, the Comet, which will operate on the old schedule of the North Coast Limited between Chicago and the Twin Cities.

Potato Shipments

Carload shipments of white potatoes in the United States in 1927 amounted to 251,211 cars, or 7,200 cars above the annual average for the five-years ending with 1927, according to a study of the white potato industry just completed by the Bureau of Railway Economics. Of the 48 states, Maine shipped more in 1927 than any other; 41,751 cars or about 17 per cent of the United States total. Minnesota shipped 31,394 cars; Virginia, 23,650; Idaho, 16,934; Wisconsin, 16,685; Colorado, 15,313; New York, 12,535; and Michigan, 10,525. Potatoes were shipped from every state except Connecticut.

These shipments constitute 25 per cent of the shipments of all fresh fruits and vegetables. Several of the producing states ship to as many as 25 other states, and many of the larger markets receive potatoes from 20 or more states. Detroit, for instance, received its potato supply from 27 states, Milwaukee 27, Cleveland 32, and Chicago 36. New York in 1927 received 21,822 cars, Chicago was second with 15,360 cars; Philadelphia 7,736 cars; Boston, 7,533, and Los Angeles 5,227 cars.

Wide fluctuations occurred from week to week with respect to prices paid to the farmer and the prices charged in the wholesale and retail markets. These fluctuations were usually several times the freight rate from point of production to the market. The cost of transportation, as reflected in the freight rate, is a secondary factor in those processes of distribution that control prices.

Midwest Shippers' Board

The improvement in business conditions in April, May and June of this year, as compared with the same months of 1927, will be much greater in the Midwest than in other sections of the country, according to a compilation just made from the reports of the Commodity committees of the Midwest Shippers' Advisory Board. Business in this territory in the second quarter of the year is expected to show an increase of 12.7 per cent over the corresponding months a year ago. The estimated increases include: coal and coke, 35 per cent; clay, gravel, sand and stone, 25 per cent; fresh fruits, 15 per cent; hay, straw and alfalfa, 12 per cent; petroleum and petroleum products, 10 per cent; sugar, syrup, glucose and molasses, 10 per cent; agricultural implements and vehicles other than automobiles, 10 per cent; chemicals and explosives, 10 per cent; poultry and dairy products, 7 per cent; iron and steel, 7 per cent; flour and meal, 5 per cent; live stock, 5 per cent; castings, machinery and boilers, 5 per cent; lime and plaster, 5 per cent; lumber, 4.5 per cent; grain, 3 per cent; fresh vegetables, 3 per cent; and potatoes, 2 per cent. The decreases are: canned goods, 8 per cent; fertilizers, 3 per cent; ore and concentrates, 2.5 per cent; and cement, 1.5 per cent. Commodities in which no change is anticipated are: salt, brick and clay products, and paper, printed matter and books.

Reductions in Grape Rates

Examiner Burton Fuller has submitted to the Interstate Commerce Commission a proposed report on the complaint filed by the Chautauqua & Erie Grape Growers' Co-Operative Association et al., recommending a finding that the present freight rates on fresh grapes, in carloads, from Chautauqua, Erie and Cattaraugus counties, New York, and Erie county, Pa., to destinations in official classification territory are unreasonable to the extent that they exceed class Rule 26 (intermediate between third and fourth class) and to the extent that they exceed specific rates based on a proposed mileage scale.

Such rates are recommended to remove alleged undue preference of California producers and as the "lowest possible lawful rates compatible with the maintenance of adequate transportation service" under the Hoch-Smith resolution. The report proposes that the carload minimum may be increased to 22,000 lb. on cars 32 ft. or more in length but that on shorter cars the minimum should not exceed 20,000 lb. A second-class rating has been generally applied. The report says that about two-thirds of the Concord crop is used for wine-making and for use on the table and that there is keen competition between the Concord and California grapes for wine and table uses. Last summer the commission ordered a reduction in the rates from California. The examiner says that complainants have made out an especially meritorious case for such measure of relief as may be granted under the Hoch-Smith resolution.

Foreign

Japanese Railways to Use 100-Lb. Rail

The Imperial Japanese Government Railways have placed an order for 60,000 tons of 100-lb. rail with the government's Yawata Steel Works to cover the requirements for the coming half-year in connection with the rail replacement program. These will be laid on the electrified portions of the government railways, some parts of the Tokaido line and a portion of the Sanyo line. In addition to the replacement of 75-lb. rail with 100-lb. rail, 65-lb. rail will be replaced with 75-lb. rail.

Fatal Collision on Northern of France

Press dispatches from Paris, April 11, report a collision of passenger trains on the Northern of France, a short distance outside the Paris terminal, in which 16 persons were killed and 33 injured. An express train, moving out of the station, collided with a suburban local passenger train coming in, both trains moving at 20 miles an hour or faster. The locomotives were wrecked and several cars were destroyed. The cause was believed to be disregard of signals by the engineman of the express train.

Westinghouse Brakes in France and Belgium

The Belgian State Railways, which have been reported to have placed an order for air brake equipment with the Westinghouse Brake & Saxby Signal Company, Ltd., London, have not yet done so, according to advices from the equipment company. However they have specified the Westinghouse type of brake equipment for use on their lines, thereby conforming with the provisions set forth in the Versailles Treaaty to the effect that all governments should equip the rolling stock of their respective railways with air brake appliances that will work uniformly during interchange. The French government has already adopted the Westinghouse brake.

Combined Air and Rail Service Planned in Switzerland

Combined railway and air merchandise transportation service between Switzerland and other European countries has been approved by the commercial conference of Swiss transportation organizations and is expected to be tried out this year, according to reports to the United States Department of Commerce.

Two Swiss aviation companies, the "Balair" in Basel and the "Ad Astra Aero" in Zurich, are reported to be proposing a contract with a Swiss railway by which merchandise, accompanied by a bill of lading specifying shipment by plane, can be transshipped from plane to train without any additional instructions from shipper or agent. This new plan is spon-

sored by the Societe de Navigation Aerienne which will hold itself solely responsible for the goods both to shipper and receiver.

The British Railways in 1927

Although continued losses of passenger revenue practically offset the increased freight receipts, English railways were nevertheless able, because of reduced expenses, to report in 1927 an increase in net of £4,219,853 or $20,551,400 over the net income of 1925. Comparison is made with 1925 because in 1926, the year of the general strike, railway gross revenues were £30,000,000 under the 1925 and 1927 figures, and thus the trend would be distorted if a comparison were made with the subnormal period.

Gross revenues in 1925 were £210,721,248 as against £211,892,756 in 1927—an increase equivalent to $5,700,000. Freight revenues increased £5,736,000 over 1925 but this was neutralized by a loss of £5,698,000 in passenger receipts. Thus the increase in net income is due to a reduction in expenses of £4,220,000. A comparison of the 1925 and 1927 net income of the four group companies follows:

	Net Income 1927 £	Net Income 1925 £	Increase £	Increase Per Cent
L.M.S.R.	18,835,943	18,001,976	833,967	4.63
L.N.E.R.	12,184,478	10,129,069	2,055,409	20.29
G.W.R.	8,441,886	7,107,759	1,334,127	18.77
Southern	6,411,991	6,415,641	*3,650	*0.06
	£45,874,298	£41,654,445	£4,219,853	10.20

Capital expenditures during 1927 amounted to £3,500,000 or $17,000,000, much of which went into new facilities and rolling stock. Electrification and electric equipment purchases, however, are responsible for an expenditure of £565,000 by the Southern. During 1928 the four companies propose capital outlays totalling approximately £7,000,000 or double the amount expended in 1927.

All companies report a falling off in the number of passengers carried, the most marked losses being in the third and workingmen classes where the figures for passengers carried were 72,896,000 under those of 1925 and revenues were down £4,445,000. First class passengers carried were 1,498,000 less than in 1925 while revenue from this business decreased £248,800.

Of the £5,736,000 increase in freight receipts, the greater part or £3,200,000 is due to increased receipts on coal traffic while increases in merchandise receipts are responsible for the greater part of the remainder.

The Great Western operating 232 highway motor coaches in 1927 is the only one of the four companies with extensive operations of this character. In 1925 it operated 206 of these vehicles or 26 less than last year. In that year, however, a loss of £3,361 was reported for these operations whereas in 1927 this was transformed into a profit of £10,243. With the exception of the Southern, which operated but two motor coaches at a profit of £477, the other roads report losses from these operations.

* Decrease.

Equipment and Supplies

Freight Cars

THE SEABOARD AIR LINE is converting 500 flat bottom gondola cars into drop bottom gondola cars.

THE IQUIQUE A PINTADOS (Chile) is inquiring through the car builders for 10 general service air dump cars.

THE WHEELING STEEL CORPORATION is inquiring for 10 gondola cars and 20 hopper cars of 70 tons' capacity.

THE ST. LOUIS-SAN FRANCISCO has ordered 250 underframes from the Virginia Bridge & Iron Company. Inquiry for this equipment was reported in the *Railway Age* of March 3.

THE NORTH AMERICAN CAR COMPANY has ordered 200 live poultry cars from the Standard Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of March 3.

Passenger Cars

THE LEHIGH & HUDSON RIVER has ordered 1 gas-electric rail motor car, 73 ft. long, with double power plant of 500 hp., from the J. G. Brill Company.

THE INTERBOROUGH RAPID TRANSIT COMPANY has ordered 23 built-up bar type trucks, for motor cars for its subway division, from the American Car & Foundry Co.

THE CHICAGO GREAT WESTERN has ordered from The Electro-Motive Company, a gas-electric power plant, to be used in converting one of its McKeen cars to gas-electric.

THE CHICAGO, BURLINGTON & QUINCY has placed an order with the Pullman Car & Manufacturing Corporation for 10 gas-electric rail motor cars to be equipped with Electro-Motive power plants. Four cars will have 400 hp. plants and six 275 hp. plants. This is in addition to the order for 25 cars purchased by this railroad last December.

THE NORTHWESTERN PACIFIC is inquiring for from 1 to 7 passenger-baggage, gas-electric, rail motor cars, 73 feet in length.

Machinery and Tools

THE CHICAGO, BURLINGTON & QUINCY is inquiring for one band saw.

THE CHICAGO & NORTH WESTERN is inquiring for one 14-in. lathe.

THE UNION PACIFIC has ordered one 6-ft. Niles plain right line radial drill, from the Niles-Bement-Pond Company.

THE MICHIGAN CENTRAL has ordered one special centering machine from the Pratt & Whitney Co.

THE GULF, COLORADO & SANTA FE has ordered four No. 15 Ransom grinding machines from the Niles-Bement-Pond Company.

THE ATCHISON, TOPEKA & SANTA FE has ordered one Ransom No. 15 grinding machine from the Niles-Bement-Pond Company.

Signaling

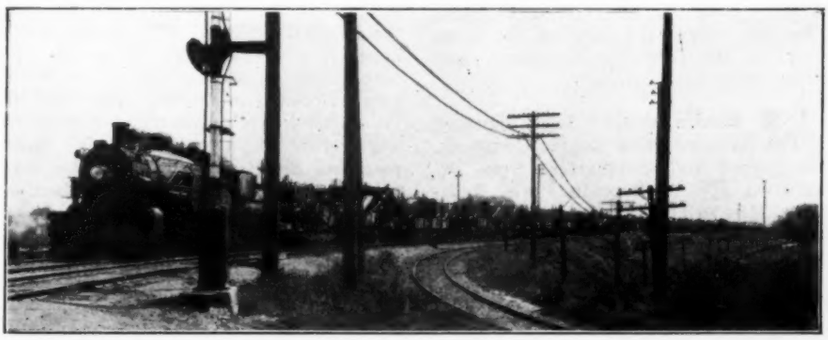
THE READING COMPANY has contracted with the Union Switch & Signal Company for the installation of an electro-mechanical interlocking at Pottsville Junction, Pa.; 18 working levers.

THE TEXAS & PACIFIC has ordered from the General Railway Signal Company, material for automatic block signals to be installed from its eastern terminus (mile post 9 near New Orleans) to Livonia, La., 105 miles; also from Longview Junction, to a point near Dallas, 28 miles; and from Fort Worth, Tex., to Eastland, 105 miles. Color-light signals will be used.

Iron & Steel

THE CHICAGO, BURLINGTON & QUINCY has ordered 100 tons of structural steel for miscellaneous bridge work from the Midland Structural Steel Company.

* * *



Trainload of Combined Harvesters Leaving Plant of the Western Harvester Company, Stockton, Cal., Over the Southern Pacific

Supply Trade

The Magor Car Corporation has moved its office from 30 Church street to 50 Church street, New York.

The Hutchins Car Roofing Company, Detroit, Mich., has moved its general offices from 1203 Ford Building, Detroit, to 2310 Eaton Tower.

The Marion Steam Shovel Company has moved its Chicago office to the McCormick building, 332 South Michigan avenue, Chicago.

The Continental Brake Shoe & Equipment Co., has moved its office from 200 Fifth avenue to room 2710, Grand Central Terminal, New York.

J. E. Linahen, vice-president in charge of sales and service of the **Galena Signal Oil Company,** with headquarters at Franklin, Pa., has resigned.

H. Van Zandt, sales representative of the **Illinois Steel Company,** has been appointed assistant general manager of sales in charge of the structural steel division.

The Kansas City Structural Steel Company has moved its district sales office in Denver, Colo., from 412 First National Bank Building to 410 Tramway Building.

Harlan W. Bird, has been appointed district representative of the **Bayer Company,** St. Louis, Mo., with headquarters in the Conway building, Chicago.

William H. Moore, formerly representative of the Metal & Thermit Corporation, with headquarters at Chicago, has been appointed sales manager of the **W & B Company** and the **Burnside Steel Foundry Company,** Chicago.

Ingersoll-Rand, Inc., has succeeded the Ingersoll-Rand Drill Company with offices at 314 North Broadway, St. Louis, Mo. A branch operating under the St. Louis office has been opened at 226 West A street, Picher, Okla.

The Haskelite Manufacturing Corporation, recently moved to larger quarters at 120 South LaSalle street, Chicago. The new offices are now on the same floor as the Vitrolite Company, and other Meyercord interests.

J. M. Rankin, district sales manager of **The Bessemer Gas Engine Company,** has moved his headquarters from 709 Linwood avenue, Tuxedo Park, Baltimore, Md., to 1109 National Press building, Washington, D. C.

Alfred E. Munch, Jr., has been appointed representative in the Chicago-Milwaukee district, with headquarters at 544 Railway Exchange building, Chicago, of the **Rollway Bearing Company, Inc.,** Syracuse, N. Y.

The Falls Hollow Staybolt Company, Cuyahoga Falls, Ohio, manufacturer of both rolled hollow and solid staybolt iron, is now represented in New York by **J. C. Tucker** of Charles Hubbard & Co., 17 Battery Place, New York City.

Hans J. Meyer has been appointed an engineer of the foreign department of the **International Combustion Engineering Corporation.** Mr. Meyer will sail in June for the Far East. Mr. Meyer became identified with the Combustion Engineering Corporation in 1926.

A. M. Castle & Co., Chicago, has given a contract to the Baker Iron Works, Los Angeles, Cal., for the construction of a new $350,000 industrial plant to be built in Los Angeles.

B. Kuckuck, who was active in the introduction of the Reuping process of timber preservation in this country a number of years ago and who has more recently been chief engineer of a large wood preserving company in Europe, has been appointed chief engineer of the **Curtin-Howe Corporation,** New York, promoters of a new wood preservative known as Zinc Meta Arsenite.

Lyon Metal Products, Inc., Aurora, Ill., has purchased the **Durand Steel Locker Company,** Chicago Heights, and the **Lyon Metallic Manufacturing Company,** Aurora. The officers of the new company are: president, **F. S. Waters,** formerly president of Lyon Metallic Manufacturing Company; chairman of the board, **H. A. Gardner,** formerly secretary of Durand Steel Locker Company; vice-president, **Keith Spaulding,** formerly president of the Durand Steel Locker Company; vice-president **Walter N. Vance,** formerly engineer and plant manager of the Durand Company; vice-president, **C. E. Gerberich,** formerly with the Lyon Metallic Manufacturing Company; secretary, **B. L. Waters,** formerly of the Lyon Metallic Manufacturing Company; assistant secretary, **Henry A. Struck,** formerly manager of sales of the Durand Company; treasurer, **W. B. Brown,** formerly with the Durand Company, and assistant treasurer, **A. W. Lauder,** formerly director of advertising for the Lyon Metallic Manufacturing Company.

O. B. Capps, president of **O. B. Capps, Inc.,** newly incorporated, with office in the Graybar building, 420 Lexington avenue, New York City, served his apprenticeship as a machinist at the Richmond Locomotive Works, from 1897 to 1901, after which he was transferred to the engineering department of the same plant as draftsman. In 1904 he was transferred to the Schenectady plant of the American Locomotive Company, and served in the engineering and manufacturing departments at Schenectady, Montreal and Richmond, until 1910, when he entered the service of Clement F. Street, who, at that time, had begun the manufacture of the Street locomotive stoker, in the former Westinghouse plant at Schenectady. In 1913 when the Locomotive Stoker Company was incorporated, Mr. Capps was made mechanical expert; in 1917 he was appointed eastern sales manager at New York, and remained in that position until February, 1928, when the company was purchased by the Standard Stoker Company. Mr. Capps will represent various manufacturers, including the Buffalo Bronze Die Cast Corporation, Buffalo, N. Y., and the Railway Motors Corporation, De Pere, Wis., manufacturers of the improved Melcher journal bearing (Hyatt equipped) which is especially adapted for railway passenger equipment.

O. B. Capps

Trade Publications

STEEL JOISTS AND STANCHIONS.—The Bethlehem Steel Company, Bethlehem, Pa., has published a new handbook on Bethlehem steel joists and stanchions for use in the lighter types of steel frame buildings. This handbook, which contains information for those interested in the economical design of relatively light steel buildings with relatively light floor loads, is put out in pocket size for convenience.

CLAMSHELL BUCKETS.—A 16-page catalog has been published by the Owen Bucket Company, Cleveland, O., which includes reference to the complete new line of buckets manufactured by this company, giving such information as weights, capacities, dimensions, etc., for each type of bucket. In addition, it recommends the best type of Owen bucket for various classes of service.

REFRACTORY CEMENT.—The General Refractories Company, Philadelphia, Pa., has issued a 21-page catalog with the title "Choosing a High Temperature Cement." This publication, which is designed primarily to assist consumers in selecting the type of refractory cement best suited to their specific requirements, gives information as to the result of tests on the various classes of high temperature cements on the market. More specifically, the catalog deals with the characteristics and advantages of Grefco, a high tem-

perature cement manufactured by the General Refractories Company.

GAS-ELECTRIC RAIL CARS.—A new type of publication consisting of a four-page pamphlet has been issued by the Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., under the title "A Tool of Modern Railroad Efficiency" which outlines the position of the gas-electric rail car and deals specifically with the Westinghouse torque governor control. The principal feature of this control is to obtain the fullest possible use of the engine through automatic external regulation of the main generator.

SPECIFICATIONS FOR CELITE IN CONCRETE. — On a single sheet issued as Bulletin 337, the Celite Products Company, Los Angeles, Cal., has issued specifications for the use of Celite in concrete, which cover such details as physical requirements for diatomaceous silica, methods of proportioning, etc.

COALING STATIONS.—The Ogle Construction Company, Chicago, has issued a bulletin on small capacity, low cost coaling stations designed for use at terminals where only 50 or 100 tons of coal are handled in 24 hours or at main line points where from 5 to 10 locomotives are coaled daily. This bulletin sets forth the advantages and the plans and specifications under which these stations are constructed and contains pictures of a few plants now in operation.

CONCENTRATION. — Fairmont Railway Motors, Inc., Fairmont, Minn., has issued a folder calling attention to its policy of concentrating its efforts on the specialized manufacture of motor cars for the railway industry. The folder is illustrated with views of the TT20 trailer and the MM9 light inspection car in service as well as with smaller views of these and other inspection and section cars.

Obituary

Ottis Parsons, district sales manager of the American Locomotive Company, New York district, died at his home in New York, on April 16. Mr. Parsons was born on June 3, 1868, at Hagerstown, Ind., and in 1892 began work in station service on the Pennsylvania Railroad, at Hagerstown. In June, 1895, he was appointed motive power clerk at Richmond, Ind., and worked his way up to chief clerk. He entered the service of the American Locomotive and the Atlantic Equipment Company at Chicago during 1906 as inspector and salesman. Mr. Parsons was transferred in July, 1910, to the New York office of the American Locomotive Company as assistant sales manager in the construction equipment department, and later was district sales manager in the New York district.

THE SOUTHERN PACIFIC has ordered 100 tons of structural steel for a machine shop at Eugene, Ore., from the Mercer Steel Company.

Construction

ALTON & SOUTHERN.—Company forces have begun the construction of an addition to the Davis yard at East St. Louis, Ill., which it is estimated will involve an expenditure of about $40,000.

ATCHISON, TOPEKA & SANTA FE.—A contract has been awarded to the Roberts and Schaefer Company, Chicago, for the construction of a 300-ton capacity three-track, reinforced concrete locomotive coaling station at Great Bend, Kan. This construction also includes the installation of a 50-ton gravity sand drying plant at the same point.

ATCHISON, TOPEKA & SANTA FE.—A contract has been let to Fairbanks, Morse & Co., Chicago, for the construction of a 500-ton four-track reinforced concrete coaling station at Galesburg, Ill. This plant will be of the automatic type, operated by electric motor, and will be equipped with scales for weighing coal as it is delivered to locomotives. The Santa Fe has filed a petition with the Board of Public Service of St. Louis, Mo., asking that the city vacate Poplar street between Fourteenth and Sixteenth streets, and a street intersection and an alley in this vicinity, in return for which the railroad would deed certain property to the city. The railroad owns the property abutting the land which it wishes to have vacated. If the petition is granted it is planned to construct a freight terminal at some time in the future.

BALTIMORE & OHIO.—This company has awarded a contract for the construction of a water treating plant with pumping facilities at Cumberland, Md., to Bickelhaupt, Inc., Richmond, Va. The project is estimated at a cost of approximately $85,000.

BANGOR & AROOSTOOK.—This company plans the construction of a steel trestle bridge 400 ft. in length at Monticello, Me. It will cost approximately $38,000 and replace a lighter structure at that point. The contract for the steel has been awarded to the Bethlehem Steel Company.

BESSEMER & LAKE ERIE.—Bids have been closed by this company for work to cost approximately $1,121,600 in connection with the completion of grade reductions and line changes on the southbound track between Filer and Coolspring, Pa. A change of line and grade reduction at Harrisville, Pa., to cost approximately $150,000, has been authorized.

CANADIAN NATIONAL.—This company receives bids until May 15 for the construction of a one-story brick addition to the freight shed at Saskatoon, Sask. The addition will be 400 ft. long and included in this project will be the construction of a two-story brick office building.

CANADIAN PACIFIC.—Contracts for the construction of a concrete, brick and steel addition to the locomotive shops at Weston, near Winnipeg, Man., have been awarded to Claydon & Co., and R. N. Wyatt, both of Winnipeg.

CHESAPEAKE & OHIO.—Plans are being considered by this road for the erection of additional station facilities at Paintsville, Ky.

CHICAGO, BURLINGTON & QUINCY.—A contract for the construction of a brick and concrete combined freight and passenger station at Torrington, Wyo., has been let to Charles Hollingsworth, Torrington, at a cost of about $30,000.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—A contract for the construction of a ground-operated water treating plant at South Minneapolis, Minn., has been let to the Phelps-Drake Company, Minneapolis, Minn. This plant will have a capacity of 700 gal. per min. or about 1,000,000 gal. per day. The building to house the pumping equipment will be constructed of brick and tile. A contract has been awarded to the Pittsburgh-Des Moines Steel Company, Des Moines, Iowa, for the construction of a water treating plant at Spencer, Iowa, which will have a capacity of 6,000 gal. per hour. The buildings in connection with this installation will be of frame construction.

DETROIT, TOLEDO & IRONTON.—This company has applied to the Interstate Commerce Commission for authority to build a yard between Cairo and Lima, Ohio, with 9 miles of main line and 10 miles of yard track.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—A contract for the construction of a 200-ton coaling station at Lake Villa, Ill., has been let to Fairbanks, Morse & Co., Chicago. A contract has also been awarded to the same company for the construction of a 200-ton coaling station and a two-track cinder conveyor at Schiller Park, Ill.

MISSOURI PACIFIC.—A contract for the superstructure of the Baring Cross bridge over the Arkansas river at Little Rock, Ark., has been let to the American Bridge Company, Chicago, at a cost of $407,000. This price includes both fabrication and erection. Plans call for the construction of a bridge which will have a total length of 1,024 ft., including one lift span.

NEW YORK, NEW HAVEN & HARTFORD.—A contract for the construction of an electric cinder plant at Danbury, Conn., and five fireproof sand storage towers for electric locomotives, three to be constructed at Cedar Hill yard, New Haven, Conn., and two at Oak Point, N. Y., has been let to the Roberts and Schaefer Company, Chicago.

NEW YORK, NEW HAVEN & HARTFORD.—This company has authorized an expenditure of $320,000 for the erection of a two-story brick building at its Fargo Street yard, Boston, Mass. The first floor, to be used for handling produce, will be served by two tracks with platforms and concrete driveways on each side. The

second floor will be used for offices. A contract for the initial work, which will cost approximately $195,000, has been awarded to the Tredennick-Billings Company, Boston, Mass.

PENNSYLVANIA.—W. F. Trimble & Sons Company, Pittsburgh, Pa., have been awarded a contract for concrete paving on Fifth avenue, New Brighton, Pa., at an estimated cost of $80,000. This road has also let a contract for furnishing and erecting a lift bridge and two approach spans for the Newark Bay bridge at Greenville, N. J., to the Bethlehem Steel Co., Bethlehem, Pa. This work is to cost about $760,000.

PENNSYLVANIA. — With regard to improvements at Newark, N. J., over which conferences have been held between representatives of the railroad and the city, the latter have made public the details of the proposed contracts for the project whereby a new railroad station and tube terminal will be erected at a cost of $25,000,000. Under the terms of a contract the railroad agrees to build a new station at Market Street; to construct two new bridges over the Passaic River to facilitate train traffic; to abandon Manhattan Transfer and make the new station the transfer point for downtown New York; to extend the Hudson & Manhattan tube line to Parkhurst Street; to provide a station on the street level for handling bus passengers; to construct two more tracks to care for tube traffic; to give the city the right to construct and maintain a trolley station below the new station, and easement for the construction of a viaduct over the tracks at the foot of Broad Street. The contract provides that the city shall vacate land for additional trackage necessary, construct a plaza at the station, build the trolley station and erect a boulevard over the bed of the old Morris Canal along which a high-speed trolley line to Newark suburbs will be constructed.

It is estimated that the railroad will spend $12,500,000, while the city will spend $7,000,000 on the station and $5,500,000 in connection with the trolley line and boulevard.

READING.—Bids are now being received by this road for the erection of its new passenger-express terminal at North Broad street, Philadelphia, Pa. The project will involve the expenditure of approximately $2,000,000, and was described on page 125 of the *Railway Age*, July 16, 1927.

RUTLAND.—This road has authorized an expenditure of $227,500 for a two-span, through truss bridge with one pier underpinning and facing abutments on its line over the Winooski river. Bids for the construction of the substructure closed May 4. No request has yet been made for bids on the steelwork.

ST. LOUIS-SAN FRANCISCO.—This company and the City of St. Louis, Mo., have agreed to share equally the cost of constructing a street subway under the railroad's tracks at Wellington avenue, St. Louis. The total cost of the structure will be about $149,000.

TERMINAL RAILROAD ASSOCIATION. — Plans have been announced by this company for the enlargement at a cost of several million dollars of the Union Station, St. Louis, Mo., which when completed will increase the capacity of the passenger, express, mail and baggage facilities about 60 per cent. The changes will enable the terminal to handle 465 instead of the present 290 trains per day and will increase the car capacity from the present 1,800 cars to 2,800 cars per day. The project includes the construction of a new passenger car yard west of the station and enlargement of the yard at Compton avenue; construction of a four-story express building at the corner of 18th street and Clark avenue facing the post office to be used as a warehouse and for offices; construction of a vehicular subway to provide access to the new express building; construction of a new baggage and mail building; the addition of ten tracks to the existing 32 tracks and the shifting of 20th street westward between Market street and Clark avenue to provide space for the station and yard enlargement. Umbrella type shelters will be used over the new station platforms with the expectation that the old train shed will be replaced by this type at some future time.

TORONTO, HAMILTON & BUFFALO.—This road has prepared preliminary plans for the construction of a modern engine terminal on a 21-acre tract which it has recently acquired at Hamilton, Ont. The new facilities which are estimated to cost approximately $1,000,000, will comprise a 25-stall brick engine house, repair shop and coaling plant, storehouse and oil house, locker building, cinder pits, standpipes, and a 200,000 gal. water tank. Construction of the coaling plant, cinder pits and water service facilities, together with grading, foundation, sewer and roadway work is expected to commence this year. It is planned to complete the project next year.

UNION PACIFIC.—This company closes bids on May 20 for the construction of a one-story brick and terra cotta passenger station at Marysville, Kan. The building will have outside dimensions of 166 ft. by 38 ft. and is to cost about $135,000. Plans have been announced for the construction of a 12-story addition to the general headquarters building at Fifteenth street and Capitol avenue, Omaha, Neb. This addition, which will be constructed of steel, concrete and tile, with exterior of buff pressed brick, Bedford stone, granite and terra cotta facing to match the present office building, will have outside dimensions of 94 ft. by 60 ft. It is expected that the contract for the construction will be awarded before July 1, 1928.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for four floor grinders, one duplex abrasive wheel grinder, one 2½-in. Universal turret screw machine and one 20-in. and one 18-in. engine lathe.

Financial

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $24,000,000 of general mortgage 4½ per cent bonds under the general mortgage of the old company dated May 1, 1889. It is proposed to sell the bonds to Kuhn, Loeb & Co., and the National City Company at 100 and interest.

CHICAGO & NORTH WESTERN.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability for $2,145,000 equipment trust 1927 certificates, series U, to procure 9 rail motor units, 25 caboose cars and 1,100 freight cars.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—*Equipment Trust.* — The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect to $480,000 equipment trust 1927 certificates, series E, to apply on the purchase of equipment to cost $644,500.

DELAWARE & HUDSON.—*Control of Ticonderoga.*—The Interstate Commerce Commission has authorized the Delaware & Hudson to acquire control of the Ticonderoga by purchase of capital stock. The latter company has 1.4 miles of line and 4.5 miles of track in Essex county, N. Y., and has been operated since 1890 by the applicant. The D. & H. now holds 34 shares of the stock and proposes to acquire the remainder—266—at par from the directors and from the trustees for the Hudson Coal Company, a D. & H.-owned property. Total stock of the Ticonderoga is 300 shares, par $100.

DULUTH, SOUTH SHORE & ATLANTIC.—*Annual Report.*—The annual report for 1927 shows a deficit after interest and other charges of $269,736 as compared with a deficit in 1926 of $428,290. Selected items from the income statement follow:

DULUTH, SOUTH SHORE & ATLANTIC	1927	1926
Average mileage operated	588.39	590.65
RAILWAY OPERATING REVENUES	$5,121,693	$5,281,270
Maintenance of way	886,358	934,579
Maintenance of equipment	809,775	919,641
Transportation	2,089,334	2,276,449
TOTAL OPERATING EXPENSES	4,061,518	4,406,891
Operating ratio	79.30	83.44
NET REVENUE FROM OPERATIONS	1,060,175	874,379
Railway tax accruals	370,886	346,103
Railway operating income	689,274	528,258
Non-operating income	116,632	131,907
GROSS INCOME	805,906	660,165
TOTAL DEDUCTIONS FROM GROSS INCOME	1,075,642	1,088,455
NET DEFICIT	269,736	428,290

(*Continued on page 1133*)

Annual Report

Missouri-Kansas-Texas Railroad Company

and Controlled Companies

Annual Report for the Year Ended December 31, 1927

ST. LOUIS, Mo., April 16, 1928.

TO THE STOCKHOLDERS:

The Board of Directors submit herewith report of the operations and affairs for the year ended December 31, 1927.

A summary of results of operation compared with the year 1926 is as follows:

Missouri-Kansas-Texas Lines

Income Account

Year Ended December 31, 1927, Compared with Year Ended December 31, 1926

	1927 Amount	1926 Amount	Increase or decrease
Average Mileage Operated	3,188.54	3,188.54	
OPERATING REVENUES:			
Freight	$43,961,759.91	$45,050,764.19	$—1,089,004.28
Passenger	7,812,203.39	8,669,898.05	—857,694.66
Mail	1,116,558.05	1,107,607.25	+8,950.80
Express	1,790,566.06	1,768,780.98	+21,785.08
Miscellaneous	822,602.96	758,824.51	+63,778.45
Incidental	636,563.06	701,501.01	—64,937.95
Joint Facility	41,274.54	43,389.68	—2,115.14
Total Operating Revenues	$56,181,527.97	$58,100,765.67	$—1,919,237.70
OPERATING EXPENSES:			
Maintenance of Way and Structures	$8,240,609.29	$7,818,706.89	$+421,902.40
Maintenance of Equipment	10,398,911.11	11,203,004.57	—804,093.46
Traffic Expenses	1,390,797.22	1,319,917.96	+70,879.26
Transportation Expenses	17,271,332.46	17,625,954.47	—354,622.01
Miscellaneous Operations	385,262.35	374,479.91	+10,782.44
General Expenses	1,940,696.83	1,984,759.18	—44,062.35
Transportation for Investment—Cr.	288,435.56	347,753.33	+59,317.77
Total Operating Expenses	$39,339,173.70	$39,979,069.65	$—639,895.95
Net Operating Revenue	$16,842,354.27	$18,121,696.02	$—1,279,341.75
RAILWAY TAX ACCRUALS	$3,131,779.10	$3,367,208.42	$—235,429.32
UNCOLLECTIBLE RAILWAY REVENUES	16,572.54	29,315.93	—12,743.39
Total	$3,148,351.64	$3,396,524.35	$—248,172.71
Operating Income	$13,694,002.63	$14,725,171.67	$—1,031,169.04
OTHER OPERATING INCOME:			
Rent from Locomotives	$50,366.62	$68,388.92	$—18,022.30
Rent from Passenger Train Cars	134,937.07	149,542.56	—14,605.49
Rent from Work Equipment	24,917.82	28,081.95	—3,164.13
Joint Facility Rent Income	169,119.86	152,840.37	+16,279.49
Total Other Operating Income	$379,341.37	$398,853.80	$—19,512.43
Total Operating Income	$14,073,344.00	$15,124,025.47	$—1,050,681.47
DEDUCTIONS FROM OPERATING INCOME:			
Hire of Freight Cars—Debit Balance	$1,349,990.18	$1,222,692.35	$+127,297.83
Rent for Locomotives	35,889.85	33,936.13	+1,953.72
Rent for Passenger Train Cars	78,765.87	68,367.40	+10,398.47
Rent for Work Equipment	49,490.27	36,984.34	+12,505.93
Joint Facility Rents	859,234.69	761,782.20	+97,452.49
Total Deductions from Operating Income	$2,373,370.86	$2,123,762.42	$+249,608.44
Net Railway Operating Income	$11,699,973.14	$13,000,263.05	$—1,300,289.91
NON-OPERATING INCOME:			
Income from Lease of Road	$113,991.72	$141,758.99	$—27,767.27
Miscellaneous Rent Income	147,542.62	143,998.20	+3,544.42
Miscellaneous Non-Operating Physical Property	*4,921.33*	*2,572.58*	—2,348.75
Income from Funded Securities	89,729.57	120,801.32	—31,071.75
Income from Unfunded Securities and Accounts	564,395.55	125,624.96	+438,770.59
Miscellaneous Income	3,068.87	3,360.25	—291.38
Total Non-Operating Income	$913,807.00	$532,971.14	$+380,835.86
Gross Income	$12,613,780.14	$13,533,234.19	$—919,454.05
DEDUCTIONS FROM GROSS INCOME:			
Rent for Leased Roads	$7,680.85	$7,661.50	$+19.45
Miscellaneous Rents	1,617.94	2,575.97	—958.03
Miscellaneous Tax Accruals	14,196.86	11,602.55	+2,594.31
Interest on Unfunded Debt	87,874.38	91,198.86	—3,324.48
Miscellaneous Income Charges	507.08	540.65	—33.57
Total Deductions from Gross Income	$111,877.11	$113,579.43	$—1,702.32
Balance Available for Interest	$12,501,903.03	$13,419,654.76	$—917,751.73
Fixed Interest Charges	4,374,464.08	4,379,546.59	—5,082.51
Balance Available for Interest on Adjustment Bonds	$8,127,438.95	$9,040,108.17	$—912,669.22
Interest on Adjustment Bonds	2,132,629.28	2,682,640.62	—550,011.34
Net Income	$5,994,809.67	$6,357,467.55	$—362,657.88

Italics denote Debit.

Financial

Prior Lien Mortgage 6% Gold Bonds, Series "C," due January 1, 1932, amounting to $12,894,577.50 outstanding in the hands of the public, were called for redemption on February 1, 1928. To redeem these Bonds at the call price of 102½% of par, an application was made to the Interstate Commerce Commission for authority to issue Prior Lien Mortgage 4½% Gold Bonds, Series "D," amounting to $13,600,000.00 to be sold at 97¼% of par. By its Report and Order the Interstate Commerce Commission granted this authority under date of December 29, 1927, and this financing was carried out early in the year 1928.

A Preferred Stock dividend of 1% was declared payable December 31, 1927, in order that quarterly dividend dates might be adjusted so as to run thereafter from January 1, 1928, at which date dividends on the Preferred Stock became cumulative. Three quarterly dividends of 1½% each were also declared payable during the year on the Preferred Stock outstanding in the hands of the public.

Preferred Stock, Series "A" (cumulative after January 1, 1928), increased during the year $16,556,322.55, of which $16,430,200.00 was on account of conversion of a similar amount of Adjustment Mortgage 5%, Series "A" Bonds and $126,122.55 for unexchanged Bonds and Certificates of Deposit on foreclosed Bonds, of which $33,400.00 was exchanged during the year and $92,722.55 is reserved for exchange under the plan of reorganization.

Common Stock (no par value), increased during the year $128,142.42, represented by 1,554.7491 shares, for unexchanged Bonds and Certificates of Deposit on foreclosed Bonds, of which 894 shares were exchanged during the year and 660.7491 shares are reserved for exchange under the plan of reorganization.

Long Term Debt decreased $16,524,289.00, of which $16,430,200.00 is represented by Adjustment Mortgage 5%, Series "A" Bonds converted into Preferred Stock, "Series A," $94,100.00 represented by underlying Bonds and Equipment Notes left undisturbed in the reorganization, matured and paid during the year and an increase of $7.50 represented by Prior Lien Mortgage 6%, Series "C" Bonds and $3.50 represented by Adjustment Mortgage 5%, Series "A" Bonds issued during the year for the purposes of the reorganization.

Operation

The mileage operated during the year 1927 was 3,188.54, the same as during the previous year.

FREIGHT—Freight revenues in 1927 were $1,089,004.28 less than in 1926, or 2.42%. This decrease was due principally to a failure of wheat and other grain crops, and to the short cotton crop in Texas and Oklahoma. The 1927 wheat crop moved largely to interior mills on low rates, while in 1926

there was a large crop with a substantial export movement at maximum rates. During the first five months of the year freight business was very good, and there was a substantial increase in revenue compared with the previous year. Until June 1st there was every reason to believe increases in revenue would continue, however, due to failure of the grain crops in our territory, as a result of drought, rust and insects, and to the heavy decline in cotton production, there was a constant decrease in revenues during the balance of the year.

PASSENGER—Passenger revenues decreased $857,694.66, or 9.89%, due principally to the diversion of local travel to busses and automobiles. There is no indication of an improvement in this situation. We participate favorably in the movement of the long haul passenger business.

OTHER REVENUES—Revenues from mail transportation amounted to $1,116,558.05, an increase of $8,950.80; express revenues were $1,790,566.06, an increase of $21,785.08; milk traffic increased $24,214.44; switching revenue increased $46,056.74; demurrage receipts decreased $48,392.34. C. HAILE
President.

Missouri-Kansas-Texas Lines Consolidated General Balance Sheet

Assets

	December 31 1927	December 31 1926 (Restated)	Increase or decrease
INVESTMENTS:			
Investment in Road and Equipment:			
Road	$233,073,527.57	$230,572,845.20	$+2,500,682.37
Equipment	53,157,729.34	52,439,619.13	+718,110.21
	$286,231,256.91	$283,012,464.33	$+3,218,792.58
Improvements on Leased Railway Property	9,746.24	8,552.87	+1,193.37
Deposits in Lieu of Mortgaged Property Sold	202.48	197.51	+4.97
Miscellaneous Physical Property	1,059,999.58	1,054,093.08	+5,906.50
Investments in Affiliated Companies—Pledged	527,000.00	527,000.00	
Investments in Affiliated Companies—Unpledged	867,905.79	861,561.42	+6,344.37
Investment in Securities Issued, Assumed or Otherwise carried as a Liability by the Accounting Company	38,416.00	121,688.00	—83,272.00
Other Investments:			
United States Government Securities	1,141,988.14	821,381.27	+320,606.87
Other Securities	647,035.60	623,532.96	+23,502.64
TOTAL INVESTMENTS	$290,523,550.74	$287,030,471.44	$+3,493,079.30
CURRENT ASSETS:			
Cash	$2,917,349.64	$1,751,872.50	$+1,165,477.14
Time Drafts and Deposits		25,000.00	—25,000.00
Special Deposits:			
Against Purchase of Securities	7,000,000.00	7,000,000.00	
Other Special Deposits	7,252.02	7,896.52	—644.50
Loans and Bills Receivable	21,237.02	13,910.65	+7,326.37
Traffic and Car Service Balances Receivable	753,568.89	814,601.61	—61,032.72
Net Balance Receivable from Agents and Conductors	846,082.05	1,131,945.72	—285,863.67
Miscellaneous Accounts Receivable	1,206,186.90	1,311,058.82	—104,871.92
Material and Suplies	6,350,302.38	6,777,784.68	—427,482.30
Interest and Dividends Receivable	538,215.66	10,333.33	+527,882.33
Other Current Assets	46,578.30	135,457.71	—88,879.41
TOTAL CURRENT ASSETS	$19,686,772.86	$18,979,861.54	$+706,911.32
DEFERRED ASSETS:			
Working Fund Advances	$25,637.86	$26,310.31	$—672.45
Other Deferred Assets	2,002.00	4,002.00	—2,000.00
TOTAL DEFERRED ASSETS	$27,639.86	$30,312.31	$—2,672.45
UNADJUSTED DEBITS:			
Rents and Insurance Premiums Paid in Advance	$97,583.57	$76,228.28	$+21,355.29
Other Unadjusted Debits	255,577.71	163,075.72	+92,501.99
TOTAL UNADJUSTED DEBITS	$353,161.28	$239,304.00	$+113,857.28
Total	$310,591,124.74	$306,279,949.29	$+4,311,175.45
The following Assets not included in Balance Sheet Accounts:			
Securities in Course of Acquisition	$6,613,301.00	$6,613,301.00	
Securities held for Exchange of Underlying Securities:			
Long Term Debt	32,038,800.00	32,171,900.00	$—133,100.00
Securities Issued or Assumed—Unpledged:			
Preferred Stock	5,529,477.45	5,655,600.00	—126,122.55
Common Stock	15,732,350.28	15,860,492.70	—128,142.42
Long Term Debt	17,785,874.96	17,691,785.96	+94,089.00

NOTE—Intercorporate Assets and Liabilities are excluded.

The Company is guarantor, jointly with other Companies, of the securities of certain terminal companies, none of which is in default.

For comparative purposes December 31, 1926 assets and liabilities have been restated to exclude from Stock and Long Term Debt the securities "In hands of Reorganization Managers for purposes of Reorganization" which securities are now carried as "Held by or for the Company." Corresponding change is reflected in account "Reorganization Suspense."

NOTE:

There were 809,119.7491 shares Common Stock outstanding in hands of the public on December 31, 1927, an increase of 1,554.7491 shares.

Liabilities

	December 31 1927	December 31 1926 (Restated)	Increase or decrease
STOCK:			
CAPITAL STOCK:			
Preferred (Par value, $100.00 per share)	$45,884,622.55	$29,328,300.00	$+16,556,322.55
(Common (No par value. See note)	66,687,649.72	66,559,507.30	+128,142.42
TOTAL STOCK	$112,572,272.27	$95,887,807.30	$+16,684,464.97
LONG TERM DEBT:			
Mortgage Bonds	$92,531,756.80	$92,541,749.30	$—9,992.50
Equipment Trust Obligations	672,800.00	756,900.00	—84,100.00
Income Mortgage Bonds	34,395,567.24	50,825,763.74	—16,430,196.50
TOTAL LONG TERM DEBT	$127,600,124.04	$144,124,413.04	$—16,524,289.00
CURRENT LIABILITIES:			
Traffic and Car Service Balances Payable	$1,076,636.36	$1,304,969.23	$—228,332.87
Audited Accounts and Wages Payable	4,126,281.50	4,076,750.68	+49,530.82
Miscellaneous Accounts Payable	154,023.60	170,999.11	—16,975.51
Interest Matured Unpaid	1,818,259.19	1,840,260.76	—22,001.57
Dividends Matured Unpaid	17,073.75	11,903.25	+5,170.50
Unmatured Dividends Declared		443,197.50	—443,197.50
Unmatured Interest Accrued	986,429.51	1,400,076.37	—413,646.86
Unmatured Rents Accrued	170,993.18	103,276.23	+67,716.95
Other Current Liabilities	161,870.96	295,876.48	—134,005.52
TOTAL CURRENT LIABILITIES	$8,511,568.05	$9,647,309.61	$—1,135,741.56
DEFERRED LIABILITIES:			
Other Deferred Liabilities	$125,050.63	$347,071.18	$—222,020.55
UNADJUSTED CREDITS:			
Tax Liability	$2,291,833.96	$2,565,836.98	$—274,003.02
Insurance and Casualty Reserves		458.83	—458.83
Accrued Depreciation—Equipment	8,003,149.19	6,017,631.15	+1,985,518.04
Other Unadjusted Credits	1,361,024.49	1,067,835.46	+293,189.03
Reorganization Suspense	29,537,344.46	29,740,265.78	—202,921.32
TOTAL UNADJUSTED CREDITS	$41,193,352.10	$39,392,028.20	$+1,801,323.90
CORPORATE SURPLUS:			
Additions to Property through Income and Surplus	$45,472.67	$36,763.90	$+8,708.77
Profit and Loss—Balance	20,543,284.98	16,844,556.06	+3,698,728.92
TOTAL CORPORATE SURPLUS	$20,588,757.65	$16,881,319.96	$+3,707,437.69
TOTAL	$310,591,124.74	$306,279,949.29	$+4,311,175.45
The following Liabilities not included in Balance Sheet Accounts:			
Liability for Securities in Course of Acquisition	$6,613,301.00	$6,613,301.00	
Securities held for Exchange of Underlying Securities:			
Long Term Debt	32,038,800.00	32,171,900.00	$—133,100.00
Securities held by or for the Company:			
Preferred Stock	5,529,477.45	5,655,600.00	—126,122.55
Common Stock	15,732,350.28	15,860,492.70	—128,142.42
Long Term Debt	17,785,874.96	17,691,785.96	+94,089.00

[ADVERTISEMENT]

Financial

(*Continued from page 1130*)

ELKIN & ALLEGHANY.—*Security Issue Authorized.*—The Interstate Commerce Commission has authorized this company to issue $56,100 of common stock, $56,100 of prior-preference stock and $185,500 of preferred. The prior-preference stock will go to stockholders and bondholders of the former Elkin & Alleghany Railway who advanced the money to acquire the property at a sale conducted in 1919 by court order. The common will go to holders of common in the former company and the preferred to state of North Carolina and Elkin county which held stock in the former company in payment for advances toward the cost of construction of the original line. Applicant had proposed mortgage bonds rather than prior preference stocks, but the commission did not favor this form of security in view of an accumulated deficit of $9,599 before interest.

FORDYCE & PRINCETON.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon its line from a point near Cynthiana, Ark., to Bryant's Spur, 3.5 miles.

ILLINOIS TERMINAL COMPANY.—*Acquisition of Control.*—By order of Division 4 of the Interstate Commerce Commission, this company has been authorized to acquire control of the St. Louis, Troy & Eastern, the St. Louis & Illinois Belt, the St. Louis Electric Terminal and the lines of the main division of the Illinois Traction, Inc., through lease of these properties for a period of 99 years. All of the capital stock, except directors' qualifying shares, of the Belt, the Troy, the Electric Terminal and the Traction Company, is owned by the Illinois Power & Light Corporation. The applicant's stock was held by other interests. Subject to approval of the Interstate Commerce Commission, the Illinois Power & Light Corp. agreed to purchase the applicant's stock for $7,500,000.

KANSAS CITY SOUTHERN.—*Annual Report.*—The annual report for 1927 shows net income after interest and other charges of $1,897,667 equivalent after allowance for the 4 per cent dividends on the preferred stock, to $3.53 per share on the outstanding common stock. Net income in 1926 was $2,279,832, or $4.80 per share. Selected items from the income statement follow:

KANSAS CITY SOUTHERN

	1927	1926
Average mileage operated	865.10	865.10
RAILWAY OPERATING REVENUES	$22,048,606	$21,921,947
Maintenance of way	2,603,629	2,506,165
Maintenance of equipment	3,496,471	3,523,780
Transportation	6,785,783	6,766,974
TOTAL OPERATING EXPENSES	14,764,491	15,548,658
Operating ratio	73.30	72.92
NET REVENUE FROM OPERATIONS	7,284,115	7,373,288
Railway tax accruals, Dr.	1,396,770	1,437,017
Railway operating income	5,879,872	5,929,587
Equipment rents, Net debit	1,019,110	835,522
Joint facility rents, Net debit	92,743	90,222
NET RAILWAY OPERATING INCOME	4,768,019	5,003,843
Non-operating income	610,568	956,604
GROSS INCOME	6,490,441	6,886,192
Rent for leased roads	171,814	173,263
Interest on funded debt	2,599,987	2,490,576
TOTAL DEDUCTIONS FROM GROSS INCOME	4,592,774	4,606,360
NET INCOME	1,897,667	2,279,832

MICHIGAN CENTRAL.—*New Director Elected.*—Frederick J. Fisher, vice-president of the General Motors Corporation, has been elected a member of the board of directors of this railroad to fill the position left vacant by the death of Chauncey M. Depew.

ST. LOUIS SOUTHWESTERN.—*New Director Elected.*—Paul J. Longua, secretary of this railroad at New York, was elected a member of the board of directors at the annual meeting to fill the vacancy caused by the resignation of Paul Rosenthal of New York.

THE SARATOGA & ENCAMPMENT.—*Sold.*—This line, in receivership since December 8, 1924, and which was bought by Morse Brothers of Denver, Colo., for junk, has recently been purchased by the citizens of the Platte River valley in Carbon county, Wyo., and of the towns of Saratoga, Wyo. and Encampment.

ST. LOUIS-SAN FRANCISCO. — *Capital Readjustment Approved.* — The Interstate Commerce Commission, Division 4, has approved this company's plan of capital readjustment by authorizing it to issue $30,979,700 of prior-lien mortgage 5 per cent bonds, series B, $102,000,000 of consolidated mortgage 4½ per cent bonds, series A, and $49,157,400 of 6 per cent preferred stock, and to assume obligation and liability in respect of $20,496,500 of Kansas City, Fort Scott & Memphis refunding mortgage bonds, which are to be pledged under the new consolidated mortgage to be dated March 1, 1928. The new prior-lien mortgage bonds, $15,571,600 additional prior-lien mortgage bonds, series B, and $1,079,578 of prior-lien mortgage bonds, series A, are to be pledged under the new consolidated mortgage. Of the new consolidated mortgage bonds, $100,000,000 are to be sold at not less than 94½ and accrued interest to Speyer & Co., J. & W. Seligman & Co., and the Guaranty Company of New York, and $2,000,000 are to be pledged from time to time to December 31, 1929, as collateral for short term notes. The preferred stock is to be offered for subscription at par to the holders of common stock at the rate of three-fourths of a share for each share of common. The proceeds of the bonds and stock, amounting to approximately $143,165,826, are to be used in the payment and redemption of outstanding securities to the amount of $134,232,443, leaving $8,933,383 available for capital expenditures and other corporate purposes. The company had applied for authority to issue $110,000,000 of consolidated mortgage bonds, but the commission has excluded from the basis submitted by the applicant in support of it two issues of notes, $5,000,000 and $3,000,000, which were issued to provide for part of the cost of 183,333 shares of common stock of the Chicago, Rock Island & Pacific, and in lieu of a note for $3,000,000 to the director general of railroads. The investment in Rock Island stock is held not to be a proper basis for capitalization and it is stated that the expenditures represented by the note to the director general have already been capitalized. The majority report says the readjustment will improve the company's financial structure because preferred stock will be issued in place of bonds and 4½ per cent bonds will be issued in lieu of bonds and notes bearing interest from 5 to 6 per cent. Commissioner Eastman dissented, saying he doubted whether so comprehensive a readjustment of capitalization should be approved until the results of the valuation are before the commission.

UNION PACIFIC.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $20,000,000 of 40-year 4 per cent bonds, to be sold to Kuhn, Loeb & Co., at 90½ and interest, and the proceeds to be applied to the payment of a like amount of 10-year 6 per cent secured bonds maturing July 1.

WABASH. — *Bonds.* — The Interstate Commerce Commission has authorized an issue of $17,867,000 of refunding and general mortgage 4½ per cent gold bonds, to be sold to Kuhn, Loeb & Co., at 93 and interest, the proceeds to be used to reimburse the treasury. It appears, the report says, that the applicant's present cash position is due in large measure to the investment during the past year, without authority from the commission, of $23,233,061 in 231,329 shares, or about 19 per cent, of the common stock of the Lehigh Valley at an average price of approximately $100.433 per share. "While the applicant may have been justified in acquiring this stock for the purpose, as it states, of protecting its position in the Eastern Trunk Line situation, yet an entirely different situation would be presented, and one which might very well be said to be against the public interest, were the applicant to dispose of the stock and, after receiving the proceeds into its treasury as free assets, disburse them for other than capital purposes. Therefore our order will provide that 177,900 shares of common stock of the Lehigh Valley in which the applicant has made investment or commitments approximately equal to the principal amount of the bonds proposed to be issued, shall not be disposed of by the applicant without our consent."

WADLEY SOUTHERN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon 22 miles of its line from Kite to Rockledge, Ga.

WHEELING & LAKE ERIE.—*Annual Report.*—The anual report for 1927 shows

net income after interest and other charges of $2,394,833 equivalent after allowance for the 7 per cent dividends on the prior lien convertible preferred stock, to $20.15 per share on the outstanding common stock. Net income in 1926 was $3,507,355, or $29.51 per share. Selected items from the income statement follow:

WHEELING & LAKE ERIE

	1927	1926
Average mileage operated	511.60	511.60
RAILWAY OPERATING REVENUES	$18,129,586	$20,925,899
Maintenance of way	2,375,000	3,114,517
Maintenance of equipment	4,653,947	4,816,739
Transportation	5,684,225	6,072,913
TOTAL OPERATING EXPENSES	13,716,571	14,984,089
Operating ratio	75.66	71.61
NET REVENUE FROM OPERATIONS	4,413,016	5,941,810
Railway tax accruals	1,462,571	1,664,998
Railway operating income	2,948,769	4,273,160
Equipment rents, Cr.	93,283	166,676
Joint facility rents, Net	Cr. 5,968	Dr. 40,960
NET RAILWAY OPERATING INCOME	3,048,020	4,398,876
Non-operating income	460,649	540,828
GROSS INCOME	3,409,418	4,813,988
Interest on funded debt	878,102	1,137,178
TOTAL DEDUCTIONS FROM GROSS INCOME	1,014,584	1,306,634
NET INCOME	2,394,833	3,507,355

YAZOO & MISSISSIPPI VALLEY.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $2,374,000 of 5 per cent improvement bonds, to reimburse the treasury for expenditures during the years 1925, 1926 and 1927, to be delivered to the Illinois Central in payment of advances.

Valuation Reports

The Interstate Commerce Commission has issued final valuation reports finding the final value for rate-making purposes of the property owned and used for common-carrier purposes as of the respective valuation dates as follows:

McCloud River	$1,540,000	1917
Minnesota Transfer	4,279,000	1919
St. Louis, Troy & Eastern	1,290,838	1919
Davenport, Rock Island & Northwestern	2,793,248	1918

Dividends Declared

Canadian Pacific.—Common, 2½ per cent, quarterly, payable June 30 to holders of record June 1.

Chicago, Burlington & Quincy.—5 per cent, semi-annually, payable June 25 to holders of record June 18.

Chicago & North Western.—Common, $2.00, semi-annually; preferred, $3.50, semi-annually, both payable June 30 to holders of record June 1.

Chicago, Rock Island & Pacific.—6 per cent preferred, $3, semi-annually; 7 per cent preferred, $3.50, semi-annually, both payable June 30 to holders of record June 1.

Colorado & Southern.—First preferred, 2 per cent, semi-annually, payable June 30 to holders of record June 18.

Maine Central.—Common, 1 per cent, quarterly, payable July 2 to holders of record June 15.

Maine Central.—Preferred, 1½ per cent, quarterly, payable June 1 to holders of record May 15.

Texas & Pacific.—Common, 1¼ per cent, quarterly, payable July 2 to holders of record May 31.

Average Prices of Stocks and of Bonds

	May 8	Last week	Last year
Average price of 20 representative railway stocks	127.55	125.71	112.50
Average price of 20 representative railway bonds	96.35	96.15	94.97

Officers

Executive

F. W. Leamy, assistant to the president of the Delaware & Hudson, with headquarters at New York, has been elected vice-president, with the same headquarters, succeeding William H. Williams, resigned.

Lawrence M. Paxton, traffic manager of the Denver (Colo.) Union Stock Yards, will on June 1 become vice-president of the Oklahoma City Junction and the Oklahoma City Stock Yards Company, with headquarters at Oklahoma City, Okla.

T. H. B. McKnight, treasurer of the various companies in the Pennsylvania Railroad System west of Pittsburgh, Pa., with headquarters at Pittsburgh, has been elected vice-president of the Pittsburgh, Cincinnati, Chicago & St. Louis, with headquarters at the same point.

William H. Williams, vice-president and a member of the board of managers of the Delaware & Hudson, with headquarters at New York, has resigned from that office in order to devote his entire time to the interests of the Missouri Pacific and the Wabash. Mr. Williams served with the Delaware & Hudson as vice-president for approximately 21 years.

Operating

J. E. Leake, has been appointed chief train dispatcher on the Chesapeake & Ohio, with headquarters at Richmond, Va., succeeding **R. S. Wilkinson,** deceased.

James W. Mee, general agent for the Pacific Electric at San Pedro, Cal., has been appointed assistant general manager of the Harbor Belt Line Railroad, with headquarters at Los Angeles, Cal.

Alfred S. Critchfield has been appointed trainmaster of the Lake Superior division of the Northern Pacific, with headquarters at Duluth, Minn.

George B. Butts has been appointed general manager of the Ferrocarril Rio Mayo, with headquarters at Navojoa, Sonora, Mexico.

R. O. Cowling, assistant superintendent on the Oregon-Washington Railroad & Navigation Company, with headquarters at Spokane, Wash., has been transferred to the Second division with headquarters at La Grande, Ore.

J. A. Brass, chief clerk to the vice-president of the Western lines of the Canadian Pacific at Winnipeg, Man., has been promoted to assistant superintendent in the Saskatchewan district, with headquarters at Wilkie, Sask.

L. W. Wells, general manager and car accountant of the Texas Midland with headquarters at Terrell, Tex., following the acquisition of that railroad by the Southern Pacific, has been appointed assistant superintendent of the Dallas division of the latter railroad with headquarters at Ennis, Tex.

R. E. Adams has been appointed trainmaster of the Bluford district of the Illinois Central, including the line between Bluford, Ill., and Metropolis Junction, with headquarters at Bluford, Ill. The jurisdiction of **E. N. Vane,** trainmaster of the Centralia district, with headquarters at Carbondale, Ill., has been extended to include the Centralia terminal.

S. S. Wilkerson, assistant master of trains of the Lebanon Branch of the Louisville division of the Louisville & Nashville, with headquarters at Lebanon, Ky., has been promoted to master of trains of that branch, with headquarters at the same point, succeeding **Frank Maris,** who retired under the pension rules of the company on March 15.

H. E. Jones, assistant superintendent of the St. Cloud division of the Great Northern, with headquarters at Minneappolis, Minn., has been promoted to superintendent of that division, with headquarters as before at Minneapolis. **F. D. Kelsey,** superintendent of the St Cloud division, has been transferred to the Mesabi division, with headquarters at Superior, Wis., succeeding **D. J. Flynn,** who has been assigned to other duties.

John Bose, superintendent of the New Orleans and Mobile division of the Louisville & Nashville, with headquarters at New Orleans, La., has been appointed director of personnel, with headquarters at Louisville, Ky. Mr. Bose will have general jurisdiction over safety work and matters of wage and rule agreements and other duties as may be assigned to him. **L. L. Morton,** special engineer, with headquarters at Louisville, has been appointed superintendent of the New Orleans and Mobile division, succeeding Mr. Bose.

J. H. Little, superintendent of the South Texas district of the Missouri-Kansas-Texas, with headquarters at Smithville, Tex., has been transferred to the Parsons district with headquarters at Parsons, Kan., succeeding **S. B. Moore,** deceased. **D. C. Dobbins,** superintendent of the Northwestern district, with headquarters at Wichita Falls, Tex., has been transferred to the South Texas district to replace Mr. Little. **T. F. Gardner,** trainmaster on the Osage and Oklahoma divisions of the Parsons district, with headquarters at Parsons, has been promoted to superintendent of the Northwestern district to succeed Mr. Dobbins. **K. Williamson,** chief clerk to the general superintendent at Denison, Tex., has been promoted to trainmaster at Parsons, replacing Mr. Gardner.

John C. Albright, chief clerk to the general manager of the Oregon-Washington Railroad & Navigation Company

at Portland, Ore., has been promoted to assistant superintendent of the First division, with headquarters at Portland, Ore., with jurisdiction over the lines north of Portland, succeeding **J. F. Corbett**, whose jurisdiction has been transferred to the lines between Portland and Umatilla, Ore. **H. B. Coburn**, assistant superintendent on the Second division, with headquarters at La Grande Ore., has been transferred to the third division, with headquarters at Walla Walla, Wash., replacing **A. G. Kamm**, who has retired under the pension rules of the company. **L. H. Frye**, trainmaster on the first division, has been transfered to the Third division, with headquarters at Spokane, Wash.

Seth H. Clark, assistant superintendent of the Boston & Albany, with headquarters at Springfield, Mass., has retired after 53 years of service with that road. Mr. Clark was born at Waterbury, Conn., in 1858. On May 1, 1875, he entered the service of the Boston & Albany as clerk and operator at the State Line. In 1881 he became the agent at that point. He was transferred to Rensselaer, N. Y. in 1888, where he was employed as assistant to the division superintendent. He remained in this position until 1901, when he became trainmaster at Albany, being promoted to superintendent of the Albany division in 1910. Since 1913, Mr. Clark has been assistant superintendent of both the Albany and Boston divisions, in charge of examinations.

Engineering, Maintenance of Way and Signaling

C. A. Hopkins, has been appointed valuation engineer of the Chicago & Illinois Midland, with headquarters at Springfield, Ill.

R. W. Adams, manager-wire chief on Missouri - Kansas - Texas Lines, with headquarters at Muskogee, Okla., has been appointed telephone engineer, with headquarters at Denison, Tex., succeeding R. A. Hendrie, resigned.

F. G. Morss, engineer and purchasing agent of the Uintah Railway, with headquarters at Mack, Colo., has been transferred to the Trinidad Lake Asphalt Operating Company, both companies being controlled by the General Asphalt Company, as an engineer at Trinidad, British West Indies.

C. A. Taylor, signal engineer on the Chesapeake & Ohio, with headquarters at Richmond, Va., has been appointed superintendent of telegraph and signals, reporting to the engineer maintenance of way, with headquarters at the same point. The position of superintendent of telegraph, held by J. A. Gleason, deceased, has been abolished. A photograph and sketch of Mr. Taylor's railway career appeared in the *Railway Age* of September 10, 1927, page 505.

J. H. Schubert, general signal inspector of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., has been promoted to signal engineer, with headquarters at the same point, succeeding **George S. Pflasterer**, who resigned on May. 1.

H. R. Leonard, chief engineer of bridges and buildings of the Pennsylvania, with headquarters at Philadelphia, Pa., has retired from active service under the pension regulations. He was born in Boston, Mass., on April 13, 1858. On March 1, 1874, he entered the employ of the Boston City Engineer's department where he was engaged in general construction work and bridge design. He resigned from this position in March, 1883, to become an engineer for Cofrods & Saylor (The Philadelphia Bridge Works), remaining with that concern until 1896. During the time he served with the above company Mr. Leonard

H. R. Leonard

was intimately connected with the work of designing and constructing a large number of the Pennsylvania's bridges and other structures, In 1897 he was connected with the Leonard, Foley Construction Company. During the years 1899 and 1900 he made a general survey and inspection of all the metal bridges on the Southern and from 1900 until March 1, 1902, he was employed as a contracting engineer with the American Bridge Company. On March 1, 1902, he was appointed engineer of bridges of the Pennsylvania, serving in this capacity until March 1, 1906, when he was made engineer of bridges and buildings. He was advanced to the position of chief engineer of bridges and buildings on April 1, 1923, having jurisdiction over the entire Pennsylvania system, holding this position up until the time of his retirement.

Traffic

W. A. Westington, terminal agent for the Southern Pacific, has been promoted to general industrial agent, with headquarters at San Francisco, Cal., succeeding **W. P. Ballard**, deceased.

A. Shelburne, freight claims agent on the Canadian Pacific, with headquarters at Montreal, Que., has been promoted to assistant general freight claims agent of the Western lines, with headquarters at Winnipeg, Man., succeeding **R. I. Bodkin**, deceased.

George D. Hunter, general passenger agent of the Texas & Pacific, with headquarters at Dallas, Tex., has, at his own request, been appointed assistant general passenger agent, with headquarters at Los Angeles, Cal. **L. B. Sandoloski**, junior assistant general passenger agent, with headquarters at Dallas, has been promoted to senior assistant general passenger agent, with headquarters at the same point. **F. L. Werner**, district passenger agent at New Orleans, La., has been promoted to junior assistant general passenger agent, with headquarters in that city.

L. Rowland Jones, assistant general freight agent of the Reading, with headquarters at Philadelphia, Pa., has been appointed general freight agent, with the same headquarters. He was born on February 22, 1882, at Haddonfield, N. J., and entered the service of the Reading on July 29, 1901, as a clerk in the Comptroller's office. On May 1, 1907 he was transferred to the freight department where he occupied various clerical positions. On September 1, 1920, he was promoted to the position of assistant general freight agent, serving in this capacity until his recent appointment as general freight agent.

Frank Jensen, who has been promoted to general passenger agent of the Texas & Pacific, with headquarters at Dallas, Tex., has completed nearly 16 years of service in the passenger traffic department of that railroad. He was born on July 21, 1877, at Ulyses, Neb., and entered railway service when 13 years old with the Chicago, Rock Island & Pacific at El Reno, Okla. Later he became cashier on the Chicago, Rock Island &

Frank Jensen

Gulf at Bowie, Tex., and on January 1, 1896, he was promoted to chief clerk in the general passenger office at Fort Worth, Tex. Mr. Jensen remained at Fort Worth until July 1, 1912, when he was appointed chief clerk in the general passenger office of the Texas & Pacific at Dallas. On March 1, 1920, he was promoted to assistant general passenger agent, with headquarters at New Orleans, where he remained until his recent promotion to general passenger agent.

Harry C. Stauffer, freight traffic manager of the Reading, with headquarters at Philadelphia, Pa., has been appointed general freight traffic manager, with the same headquarters. Mr. Stauffer entered the service of the Reading as an agent at Kimberton, Pa., serving in the same capacity successively at Byers, Douglassville, Chester and Reading, Pa. He was advanced to the position of division freight agent at Reading Terminal in February, 1910. In April, 1920, he was appointed general coal and freight agent, holding this position until May, 1921, when he was appointed general freight

Harry C. Stauffer

agent. He became freight traffic manager on April 3, 1923, serving in this capacity until his recent appointment as general freight traffic manager.

John W. Hewitt, assistant freight traffic manager of the Reading, with headquarters at Philadelphia, Pa., has been appointed freight traffic manager, with the same headquarters. Mr. Hewitt was born at Philadelphia in May, 1876. He entered the service of the Reading in June, 1892 as a clerk at the Broad Street freight station, where he

John W. Hewitt

served in various capacities until 1900, when he was made chief clerk at the Port Richmond Terminals. In 1910 he was appointed chief clerk in the freight traffic department, and in 1920 he was promoted to the position of division freight agent, serving in this capacity until 1921, when he became general coal freight agent. He was appointed assistant freight traffic manager in 1923 and served in this position until May 1, 1928, when he was appointed freight traffic manager.

William B. Gheen, general freight agent on the Reading, with headquarters at Philadelphia, Pa., has been appointed assistant freight traffic manager, with the same headquarters, succeeding J. W. Hewitt, promoted. **Rufus D. Heusner,** coal freight agent, has been appointed general coal freight agent, with headquarters at Philadelphia, succeeding **C. Rambo,** retired. **Harry B. Light,** general agent in New York City has been promoted to the position of coal freight agent succeeding Mr. Heusner. **Barton M. Croll,** division freight agent has been appointed assistant general freight agent, succeeding L. R. Jones, promoted. The position formerly held by Mr. Croll has been abolished. **Joseph A. Fisher,** foreign freight agent, has been appointed assistant general freight agent. **Howard Albright,** general agent at Detroit, Mich., will succeed Mr. Fisher as foreign freight agent. **Don Y. Smith** will succeed H. B. Light as general agent in New York City. **Harold H. Bauer** has been appointed assistant general agent. **James C. Beene,** general agent at Cincinnati, O., has been appointed general agent at Detroit, Mich., he will be succeeded at Cincinnati by **Herbert H. Clatur.**

George L. Ernstrom has been appointed assistant master mechanic of the Fargo division of the Northern Pacific, with headquarters at Staples, Minn.

Purchases and Stores

George T. Richards, district storekeeper of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Minneapolis, Minn., has resigned, effective May 15, to enter other business in California.

Montgomery Smith, who has been appointed assistant general purchasing agent of the Pennsylvania, with headquarters at Philadelphia, Pa., was born on October 28, 1862, at Philadelphia. He entered railway service with the Pennsylvania on July 23, 1879, as a clerk in the office of the auditor of passenger receipts. From August 22, 1879, to December 1, 1893, he served in the same capacity in the purchasing department, being made lumber clerk on the latter date. On February 1, 1896, he was promoted to the position of chief accountant, remaining in this position until June 1, 1900, when he became chief clerk. From November 12, 1902, to June 15, 1905, he served as assistant to the purchasing agent, and at the latter time he was made assistant purchasing agent at Philadelphia. On March 1, 1920, he was appointed purchasing agent of the Eastern region and on February 16, 1924, he was made purchasing agent of the Pennsylvania System. Mr. Smith was appointed assistant to the general purchasing agent on January 1, 1927, serving in this capacity until May 1, 1928, when he was made assistant general purchasing agent.

Obituary

John F. O'Brien, trainmaster on the Chicago, Milwaukee, St. Paul & Pacific at St. Paul, Minn., died at his home in that city on May 2.

Lieut.-Col. Francis T. A. Junkin, formerly general attorney of the Atchison, Topeka & Santa Fe, died at his residence at Washington, D. C., on May 6.

Ralph E. Hammond, assistant master mechanic of the Fargo Division of the Northern Pacific, with headquarters at Staples, Minn., died at the Northern Pacific hospital at St. Paul, Minn., on April 14.

John H. Pahlmann, general auditor of the St. Louis Southwestern, with headquarters at St. Louis, Mo., died in that city on May 4 at the age of 63 years. He had been connected with the accounting department of the Cotton Belt for 35 years.

Henry J. Cambie, a locating engineer on the construction of sections of the Canadian Pacific more than 50 years ago, died at Vancouver, B. C., on April 23 at the age of 92 years. He was born in 1836 in Tipperary, Ireland, and came to Canada at the age of 16 years, when he first entered railway service in 1852. During the years following 1871, Mr. Cambie made explorations which determined that the Fraser River canyons in British Columbia could be used for railway lines, later locating a line for the Canadian Pacific along the Fraser river between Yellowhead Pass and Port Moody with Burrard Inlet, B. C., as the western terminal. He acted as engineer in charge of construction of the Canadian Pacific section constructed by the Canadian Government in Fraser canyon and of the section between Savona, B. C., and Shusway, also along the Fraser river. In 1886, Mr. Cambie was appointed division engineer of the Pacific division of the Canadian Pacific, with headquarters at Vancouver, B. C., becoming special assistant engineer in 1902. For the past 20 years he had been retired from active business life.

ARMCO INGOT IRON.—The American Rolling Mill Company, Middletown, Ohio, has published the second edition of "Armco Ingot Iron—Its History and Service," under the new title "Armco Ingot Iron—Its Development and Service." This second edition is a complete revision of the first edition, and, as the new title implies, deals with the development, characteristics, and manufacture of Armco Ingot Iron, together with information concerning outstanding installations of Armco Ingot Iron in various classes of service.